- Community Medicine :-

  * Delivery ⇒ Comperhensive H.C ⇒ Population
    - Promotive
    - Preventive
    - curative

  * Community Medicine = Social Medicine

- Health :- WHO definition :-

  * state of Complete well being
    - physical
    - Mental
    - Social
    - Spiritual

  not merely absence of disease or infirmity.

---

* Dimensions of health = تترزا ~ التعريف

  → physical = body systems act in harmony.
  → Mental = Normal Psychological & emotional status.
  → Social = Normal relation WZ others.
  → Spiritual = principles & Ethics.

---

* Spectrum of health :- = Levels of health
  - Ideal = WHO
  - Positive = Adjustment
  - Marginal = unapparent D*
  - Negative = apparent D*
  - Complicated = Advanced D*

N.B ⇒ D* = disease

* Determinants of health :-
= factors affect Level of health :-

[redacted]

1- Genes ⇒ Diabetes & Hyper tension.
2- Nutrition ⇒ under, over, Mal Nutrition & Allergy
3- Socioeconomic ⇒ Housing, Occupation....
4- Habits ⇒ smoking & Alchol ----
Exercise & Diet ++++
5- Culture :- Love given to elderly vs aging.

6- Policies :- Mass vaccination & Drugs.

List of dc

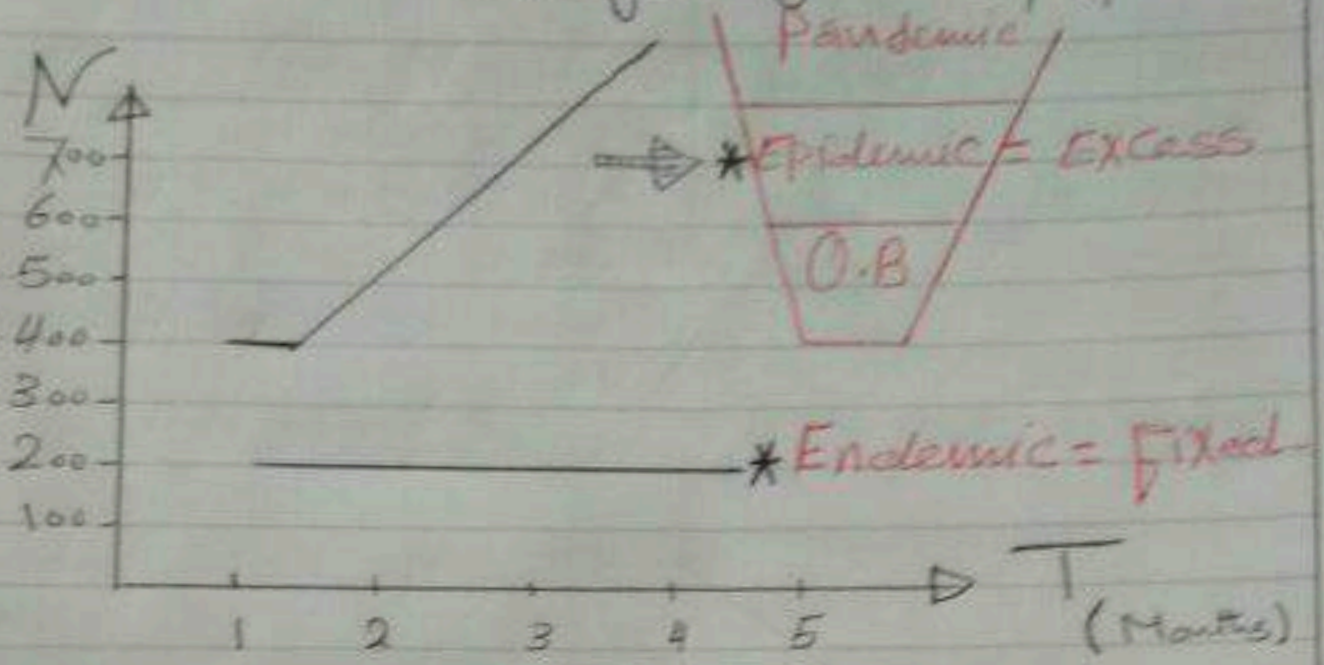
Epidemiology

Epi = upon = over
Demos = People
-ology = Study

* Def :-
- Studying ⟨ Distribution / Determinants ⟩ of health related events
in order to Design prevention & control prog.

* Uses :-
- Natural history
- Magnitude
- Risk factors
- People under risk
- Implementation & evaluation of A
- Predict future pattern of dise

* patterns of disease occurrence in the Community : - أشكال ظهور المرض في المجتمع

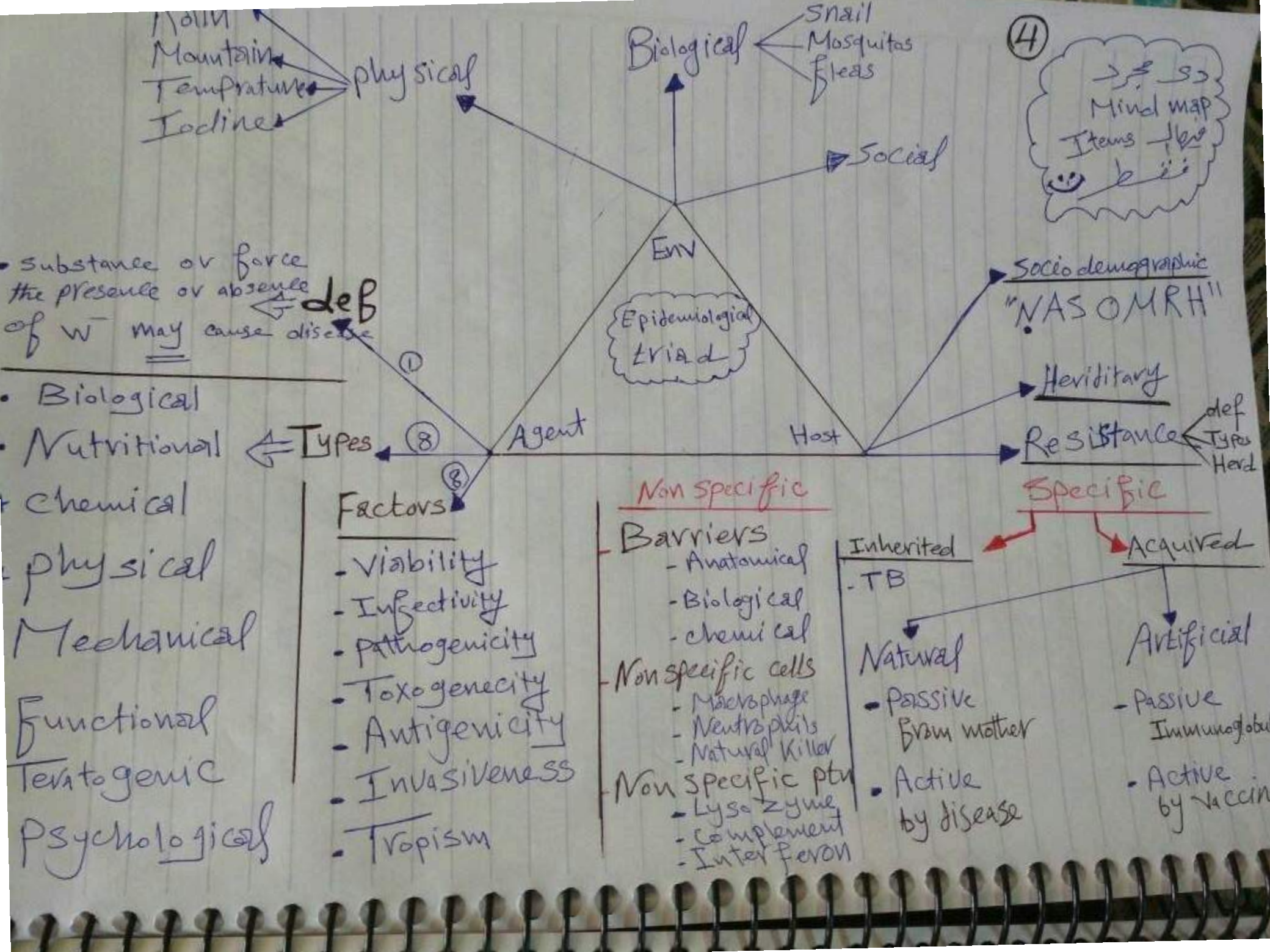


NB:- - Sporadic cases = Non Frequent disease
- Exotic Epidemic = Epidemic for 1st time or after long period.

---

* Process of disease كيف يحدث المرض

= Disease causition theory **
= Epidemiological triad
= Ecological triad
= Multifactor theory
= pre pathogenesis period.
= Natural history of disease.


Noise
Mountain
Temprature
Iodine
physical
Biological
Snail
Mosquitos
fleas
Social
Mind map
Items
Env
Epidemiological
triad
Host
Agent
Socio demographic
"NASOMRH"
Heriditary
Resistance
def
Types
Herd
def
substance or force
the presence or absence
of w may cause disease
Types
Biological
Nutritional
chemical
physical
Mechanical
Functional
Teratogenic
Psychological
Factors
Viability
Infectivity
pathogenicity
Toxogenecity
Antigenicity
Invasiveness
Tropism
Non specific
Barriers
Anatomical
Biological
chemical
Non specific cells
Macrophage
Neutrophils
Natural Killer
Non specific ptn
Lysozyme
Complement
Interferon
Specific
Inherited
TB
Acquired
Natural
Passive
from mother
Active
by disease
Artificial
Passive
Immunoglobu
Active
by vaccin

N.B:-

* Ecology:-
"Study of Mutual relationship between the agent & it's Environmental needs that affect the process of disease."

* Herd Immunity:-
Def:- Immunity of community

Factors:-
- Mass vaccination.
- previous exposure to disease.

Effects:- Control the pattern of disease

Nil	Medium	high
⇩	⇩	⇩
Epidemic	Endemic	Sporadic cases

---

* ✱ Stages of disease مراحل المرض ✱

1- Prethogenesis period = Epidemiological triad

2- Incubation period = From infection up to symptoms

3- Clinical Period = symptoms, signs & comp

- Chain of infection :-

- : كيف تنتقل العدوى

Reservoir = Source

Infectious Agent

EXIT

Mode of infection

Inlet

susceptible Host

- Suitable factors

Human | Animal | Inanimate

Animal → Zoonosis
- Cattle :- TB
- Goats :- Brucella M
- Cat :- Toxoplasmosis
- Rat :- plague

Case
= Symptoms

Carrier ★
- Carry
- discharge
- No symptoms

Types
- spectrum: Incubatory 3M; Convalescent C; Contact [H] D E
- Period: Acute → C; chronic → D & E
- Continuity: Continous: D; Intermittent: E
- site e.g:- Intestinal: C

Importance
1- Difficult detection.
2- Diagnosed by Lab.
3- No limitation of Mobility.
4- great risk if F. H.
5- carriers > cases.
6- Initiate epidemic.

* Mode of transmition :- ★

- Droplet :- = Inhalation
- Direct
  - coughing, sneezing
- Indirect
  - Fomites & articles
- Air borne
  - Dust

e.g:- Meningitis, Measles

- Food & water borne
= Ingestion
e.g:- Enterica, Polio

- Contact
- Inoculating
- Penetrating :- Rabies, Needles.

Sexual :- HIV
Asexual :- Trachoma

- Vertical = Transplacental To RCH

* Remembre!-
- Phases of disease
[1] Prepathogenesis Period !- Triad
[2] Incubation Period !- from infection up to symptoms
[3] clinical Period !- S, S & comp

---

* Incubation period ! ☆ (4)
- Def !- Period Taken by the agent to be effective or Infective (Extrinsic).
- Types!-
• Intrinsic = Incubation period ☆
- From infection up to symptoms
- Importance !-
* Contact. Isolation & surviellance.
= Max I.P.
* Post exposure vaccination !- RA ME
- Examples !-
* hours !- Staph food poisoning
* days !- Influenza
* weeks !- Most infections
* Months !- Hepatitis C
* Years !- Leprosy.

• Extrinsic
- Taken outside the human body → infective.
- Inside snail, Vector or In Soil

---

* Prevention of Diseases

Normal
↓↓
Risk Fact
||
Primary Prevention
||
↓↓
Disease
||
Secondary Prevention
||
↓↓
Disability
||
Tertiary Prevention
||
↓↓
Handicap

---

[1] Primordial Prevention → ↓↓ RF
→ Avoid harmful habits

---

[2] Primary Prevention
- During Prepathogenesis period
- General = Health promotion (7)
  - Health education. التثقيف الصحي
  - Proper Nutrition. الغذاء
  - Safe Water supply. الماء
  - Proper Housing & Ventilation. الهواء
  - Proper Waste Management. النفايات
  - Socio economic development.
  - Genetic counciling.
- Specific Mesures:-
  - Vaccination :- BC G for TB.
  - Seroprophylaxis :- Anti titanic IGs.
  - Chemoprophylaxis :- long acting Penicillin.
  - Others :- Snail Control & Milk sanitation

---

[3] Secondary prevention
- During Pathogenesis period
- Early deteection → periodic ex
  → Screening test
- proper treatment → achieve cure
  → prevent complic

---

[4] Tertiary prevention
- During period of Comp to ↓↓ Disabili
- Rehabilitation → Medical.
  → Socias .
  → Family .

* Vaccination

Idea :- Production of specific Immunity after exposure to Antigenic material.

Nature :-

[1] Live Attenuated vaccine :-
BCG for TB , Sabin for polio
MMR
17D & DAKAR ⇒ Yellow fever

[2] Killed vaccine :-
TAB , SAIK for polio
pertussis , plague

[3] Toxoid :- D & T

[4] Special preparation :-
- Subunit vaccine :- Meningococcal V.
- Recombinant vaccine :- hepatitis B V.

NB :-
- Compulsory vaccines = Vaccines included in EPI
* - We wish to add some other vaccines to EPI :-
  - pneumococcal ⇒ Poly saccharide ⇒ Pneumonia
  - Varicella vaccine ⇒ Live Attenuated ⇒ chickenpox
  - Rota virus vac ⇒ Live " ⇒ Diarrhea
  - HPV vac ⇒ Recombinant ⇒ STDs

---

* Serophylaxis
  - Human
    - Natural MTS
    - Specific MRPT
  - Antitoxin
    - Diphtheria
    - clostridia

* Chemoprophylaxis
- Long Acting penicillin R.F
- Sulfadiazine :- M & Plague
- Tetracycline :- cholera
- Primaquine :- Malaria

* Control of diseases

- Aim !- prevent spread
- Mesures !- (3)

* For case

1- Notification !- Aim & Levels
   - Immediately : eg:- M D A R
   - Weekly : eg:- TB & Measles
   - Monthly : eg: Mumps & Rubella
   - WHO Notification ⇒ APCY.

2- Isolation !- Aim, Levels & period
   - At home !- Most of infection.
   - At hospital !- Meningitis, enceph, TB & polio
   - Quarantine !- APCY

3- Treatment

4- Disinfection !- Aim & Levels
   - Concurrent
   - Terminal

5- Release !- after clinical & Lab recovery.

* For contacts

1- Listing !- NAS OR IRH
2- Surviellence !- for max. I.B
3- Isolation !- APCY
4- protection !- Sero & chemo prophylaxis

* For Community !- primary preventive Mesures

* N.B !- During epidemics !-
protect your borders from human & animal.

* Surviellance التترصد

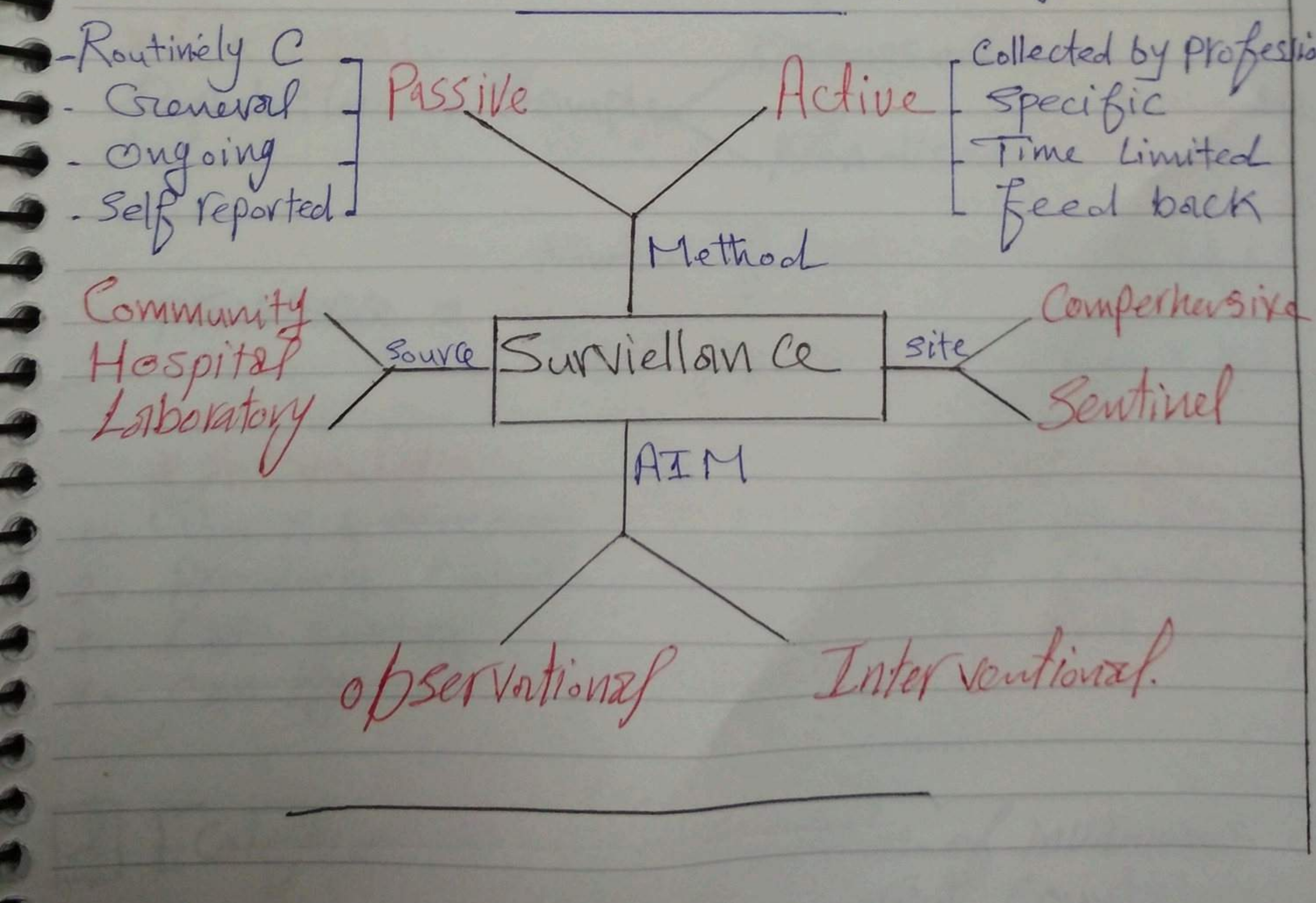
- Ongoing, Systematic Collection / Analysis / Interpretation of DATA essential for planning / Implementation / Evaluation of PHP

then Disseminate results to P.H. Authority.

---

* Uses of surviellance

- Natural history
- Magnitude
- Distribution
- Pattern
- Risk factors
- people under risk
- prevention & control
- planning & Evalution



* Epidemiological studies

- Observational
  - Descriptive
    - cross sectional.
    - Ecological.
  - Analytical
    - Case control study.
    - Cohort study.
- Interventional
  - RCT

---

1 Cross Sectional studies
= prevalance study "Distribution"

*Design:-

- Population → Sample → Diseased / Non diseased → prevelance

- $\text{prevelance} = \frac{\text{Number of cases in certain Y \& L}}{\text{Total population in same Y \& L}}$

*Advantages:-

1- Quick & economic
2- Prevalance, Magnitude, distribution
3- Case finding
4- Can generate hypothesis.

*Disadvantages:-

1- No Association
2- No Deaths
3- No Rare D

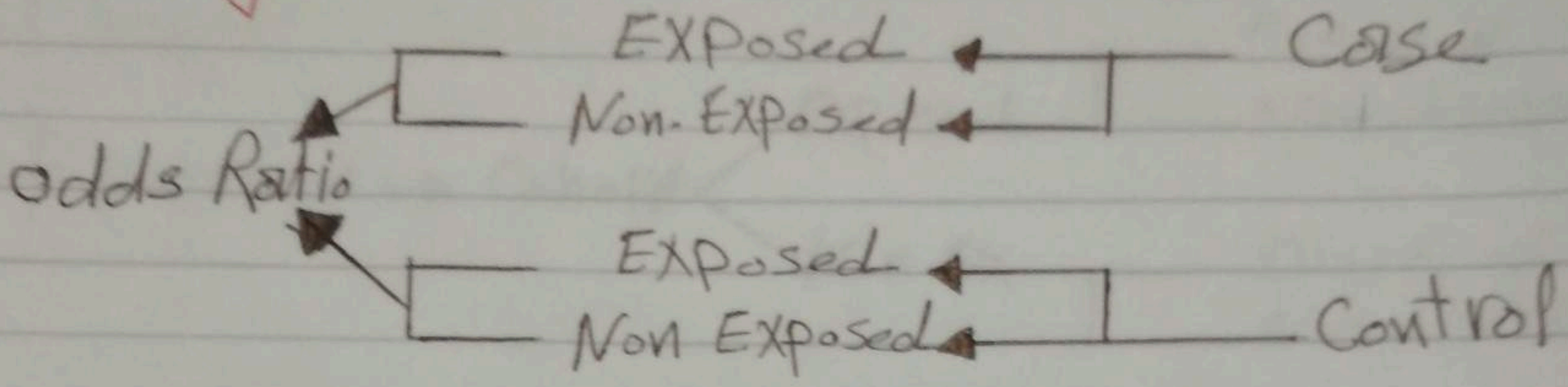
---

2 Ecological Studies: Correlation of invironment of Different Countries.

[3] Case Control Study:-

= Retrospective Association study

*Design:



	Case	Control
EXposed	A	C
Non Exposed	B	D

$$\text{Odd's Ratio} = \frac{AD}{BC}$$

* the greater the Ratio the greater the association

---

*Advantages

1- Quick & economic.
2- Study Association.
3- calculate odd's Ratio
4- Usefull in rare diseases
5- Can test hypothesis

*Disadvantages

1- Memory bias
2- Living bias
3- No Incidence
4- Difficult (Not easy)
5- Not percised

---

(4) Cohort Study :- Analytical study

- Prospective = Most important
- Retrospective = Depend on Registrations.

* Design :-

- Population → Cohort
  - Exposed
    - Diseased
    - Non diseased
  - Non Ex
    - Diseased
    - Non diseased

	Diseased	Non diseased
Exposed	A	C
Non Exposed	B	D

- Incidence rate in Exposed = $\frac{A}{A+C}$

- " " in non Exposed = $\frac{B}{B+D}$

* Relative risk = $\frac{\text{Incidence in Exposed}}{\text{Incidence in Non Exposed}}$

* Attritutable risk = $I_1 - I_2$

---

* Advantages

1- Association
2- Incidence
3- RR & AR
4- Can test Hypothesis.

* Disadvantages

1 - Expensive
2 - Take long time
3 - Not in rare D
4 - Loss of follow up

⑤ Randomized clinical trials:-

- Most Accurate
- Interventional Study ⟨ preventive / Curative

* Design:-

- Population → Sample → Treatment → out come
  → Placebo → out come

* Types:-

- Single
- Double Blinded trials.
- Triple

* Conditions must be considered:-

- Ethics ⇒ Consent, dignity, privacy, Justice
- Randomization
- Intention to treat principle:- Maximal benifit

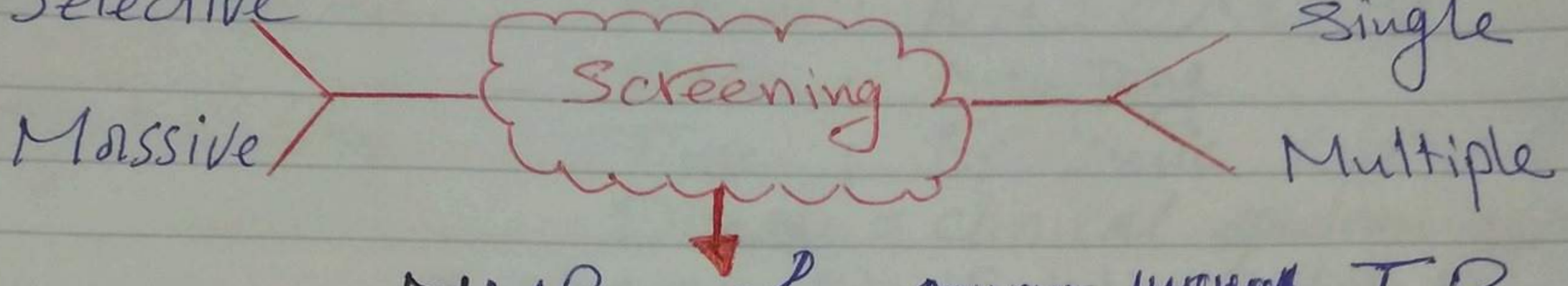
* Remembre

- Control = Mesurements of disease are acceptable.
- Elimination = Zero incidence
- Eradication = No cases, No Agent, No Reservoir
- Emerging disease = Newly appeared.
- Re-Emerging disease = Coming back.

* Screening

2ndry prevention

- **Def-** Investigating apparently healthy persons to detect unrecognised cases or those under high risk.



- MMR of TB.
- Suger in urine for Diabetes.
- Mammography for cancer breast.

- **Characters of effective test:-**
  - Quick & economic and simple.
  - Reliable :- Stable results ⇒ Dependable.
  - Valid :-
    → Mesures what is supposed to mesur

	Diseased	Non diseased
Positive	TP	FP
Negative	FN	TN

- Sensitivity = TP / Diseased X100
- Specificity = TN / Non diseased X100

Improving sensitivity makes specificity worse

- PPV = TP / Positive X100
- NPV = TN / Negative X100

* Investigating an Outbreak

1- Establish Existance

2- Confirm Diagnosis

3- Deseriptive Epidemiology
- Person : NASOMLRH
- Place : Mapping
- Time : Epidemic Curve *
- Disease = clinical epidemiology.

* observe Manifestation & Lab results
- Confirmed cases
- Probable cases
- possible cases

* In Food Poisoning :-
- Food :- Listing - Sampling
  How is the Storage, preparation & distribution
- Food Handlers ;-
  - Interveiwing & examination
- Food place ;-
  - check for Rodents & possible Methods of Contamination

4- Analytical epidemi
- Study Association through Relative risk
- Generate hypothesis. RR = 1 No
  RR > 1 Yes

5- Intervention
- Preventive & Control Mesures

6- Findings
- Dissemination

* Epidemic Curve

• Def :- Frequency Polygon shows Number of cases of an epidemic Per unit time.

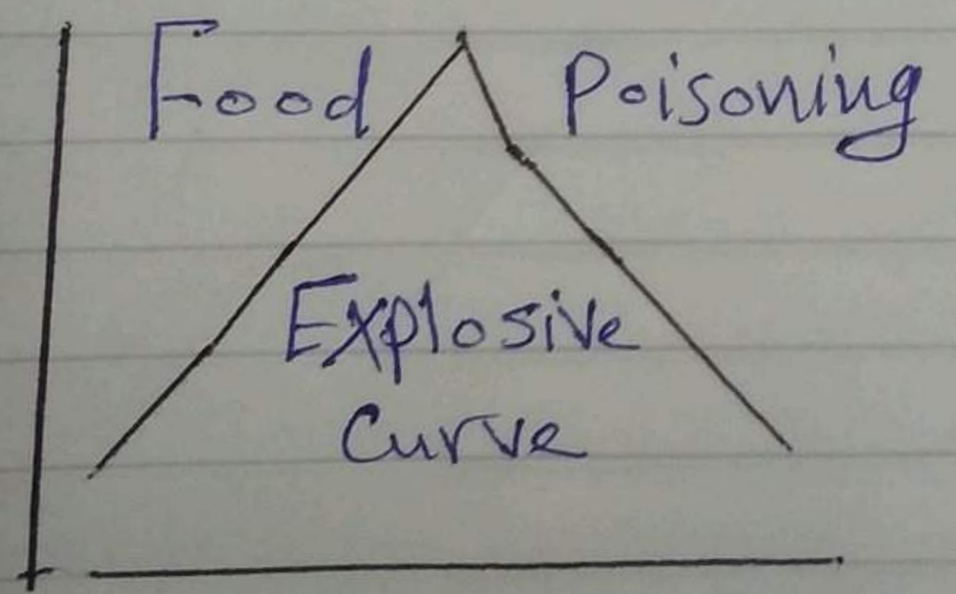
• phases :-

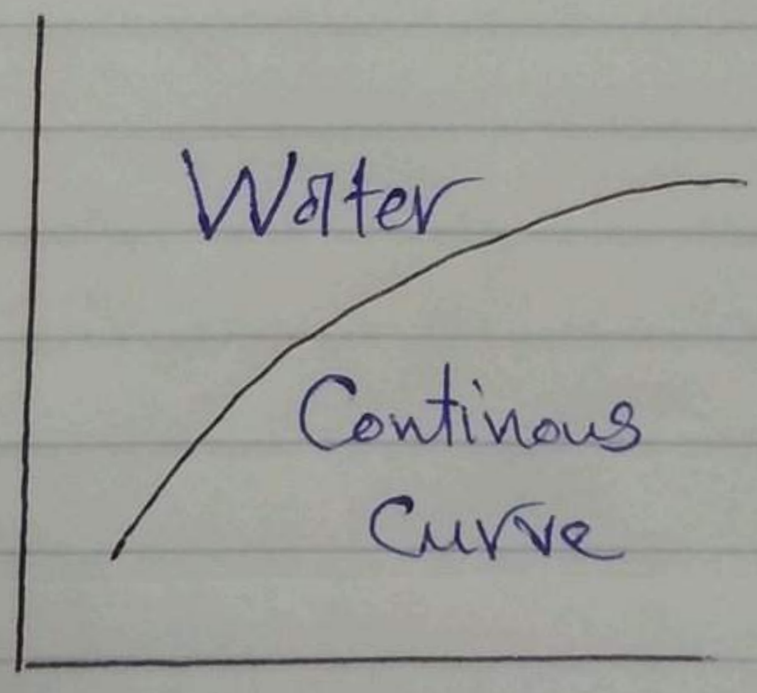
* Ascending limb
  - Steep
    • Short impulse
    • Short I.P
    • Rapid spread
  - Gradual
    • Long impulse
    • Long I.P
    • Slow spread

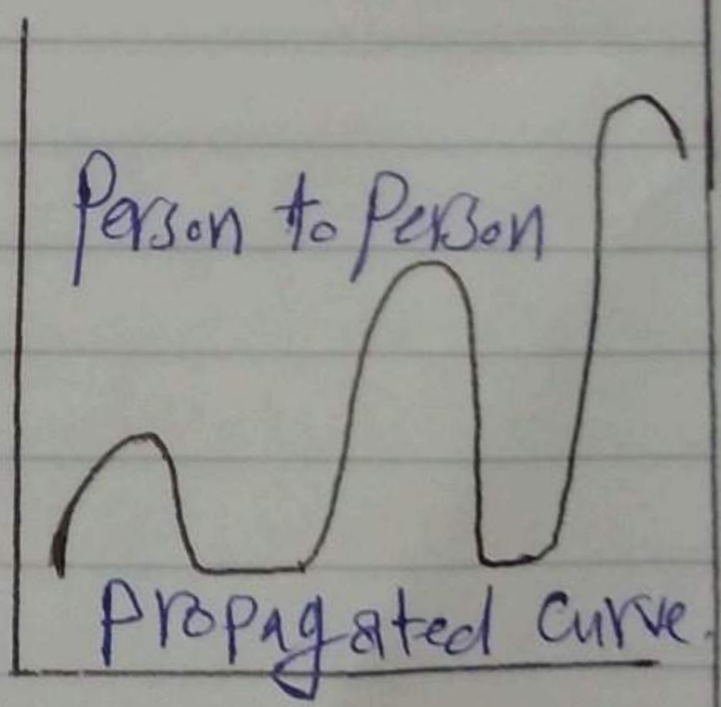
* Descending Limb
  - steep
    • Effective control
    • Exhaustion of SuS.
  - Gradual
    • Defective control
    • Secondary cases

* Peak - ACute - Broad - platue

• types :-







• Values :-

1 - Source
2 - Mode of infection
3. Incubation period
6. Evaluate control
5. Nature of cases
7. Can Generate hypothesis
4. Type of epidemic.

STATISTICS

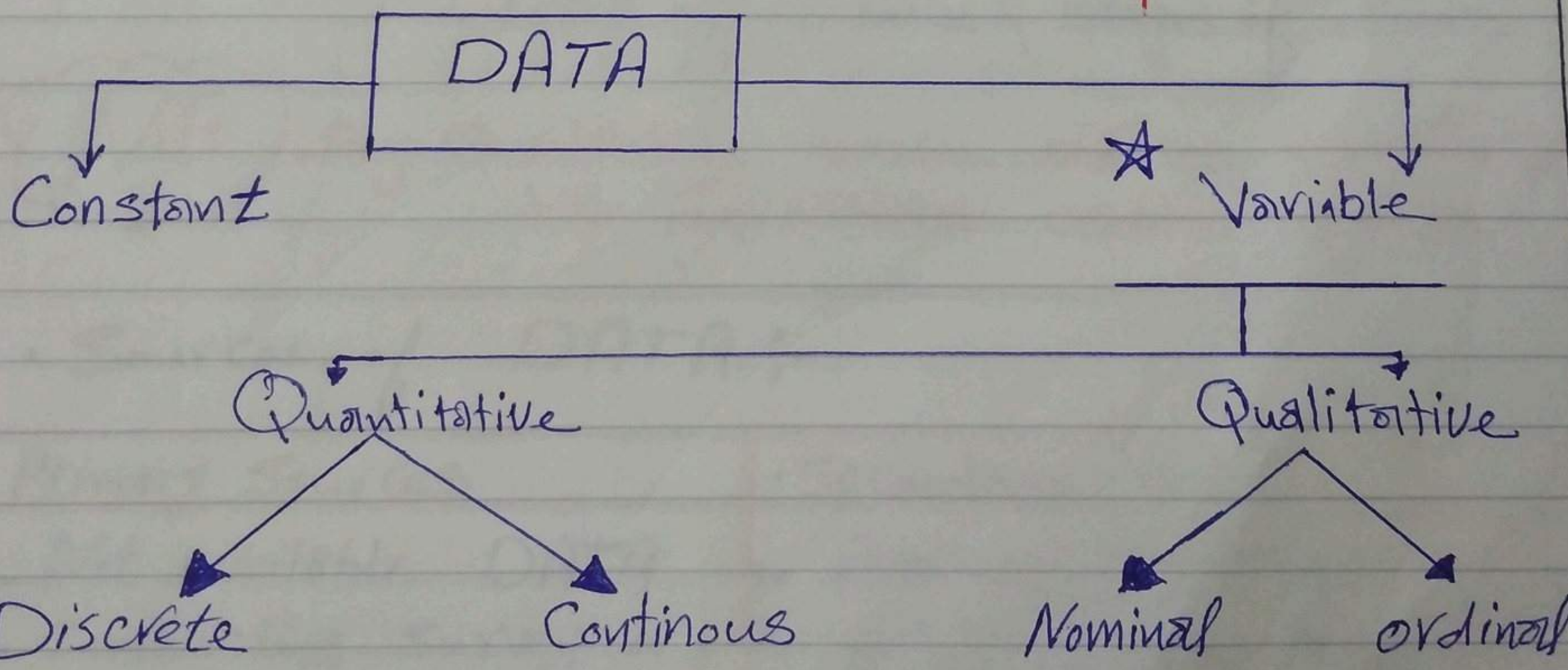
- statistics :- Collection, Presentation, Analysis, Interpretation of DATA.

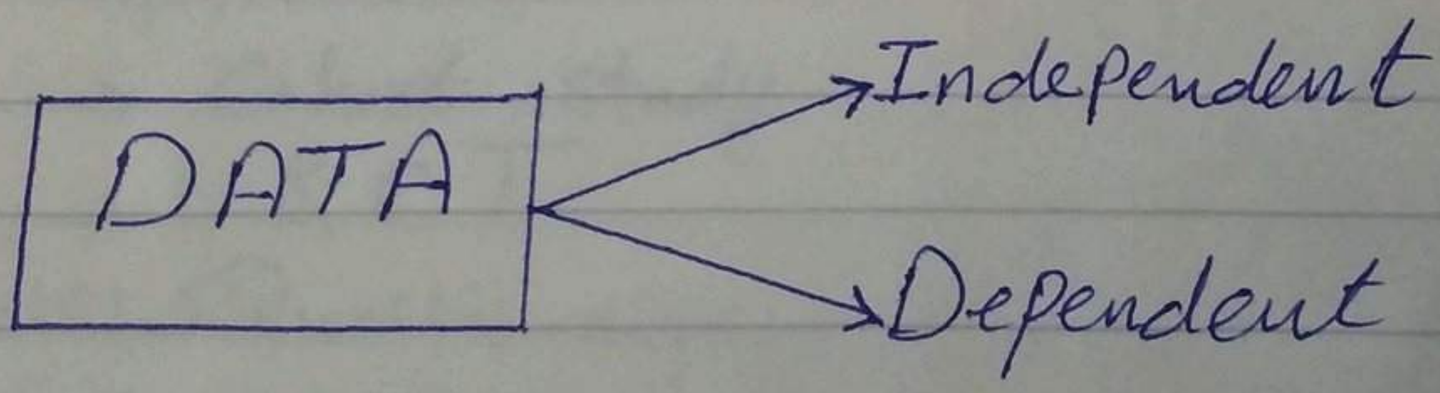
- Biostatistics :- Statistics In the Medical field.

DATA

- Defintion.
- Types.
- Sources & Tools.
- presentation & Analysis

DATA	Information
- Individual values	- Summated values
- raw material of statistics	- product of statistics





Population & Samples

* Population :- Total Units under the study.
* Sample :- ↗ Selected Subset from the Pop.

types of Samples

Random = probability

Selective

1- Simple	. Idea :- every one has equal chance to be selecte . Steps : 1- Sampling Pop 2- Sampling Frame = listing units 3- Lottery. . Advantages VS . Disadvantages 1- Simple. 1- Units may be scattered 2- Mesurable errors. 2- Not best representation. 3- the best in homo. pop. 3- Need Complete Listing.
2- Systematic	. Random starting point.
3- Stratified	. Idea :- Population ⇒ Homogenous subgroups. . Adva :- . Inform about pop & it's subgroups. . high precision ..... when ??? . Disad :- . Difficult to identify strata. . Low precision ..... when ???
4- Cluster	. Idea :- Population ⇒ Hetrogeneous groups " clusters " . Adva :- - Simple - Limited resources. . Disad :- - Cluster may be homogenous.
5- Multi Stage	. Consecutive Sampling. . Ideal in Large populations.

* Tools of DATA collection :-

- Questionnaire	- Interviews
• Not expensive	- Expensive Relatively
• Not All DATA	- Suitable for Complex Questions
• Not All People	- Suitable for Low Litrate People
• Not high response	- high response Relatively

- Reporting :- Information is provided without ?

- Observation :- - Most Accurate.
- e.g :- Psychological settings

- Registration :-
  - Represent ⇒ Secondary Source of DATA.
  - Used Widely AS in MHC programms.

DATA presentation

Numerical

Central Tendency :-
→ Mean
→ Median
→ Mode

Dispersion :-
- Range
- Variance
- Standard deviation
- Coefficient of variation

Tabular

- Frequency distribution table
= one variable

- Cross table
= Contingency
= Bi or Multi Variate table

Digrammatic

- Graphs :-
→ Histogram
→ Frequency P
→ Scatter D
→ Scale line G

- Charts :-
→ Bar chart
→ Pie chart

*Numerical Presentation of DATA :-

• Mesures of Central tendency :-

MEAN	$\bar{X} = \frac{\sum X}{n}$	. Sensitive to extreme values
MEDIAN	- Central value after arrangement . Median = Middle number in Odd "n" = Average of the two middle numbers in Even "n"	- Not affected by ex values
MODE	- Most Frequent	- Not affected by ex values - May be 1, 2 or more - May be absent.

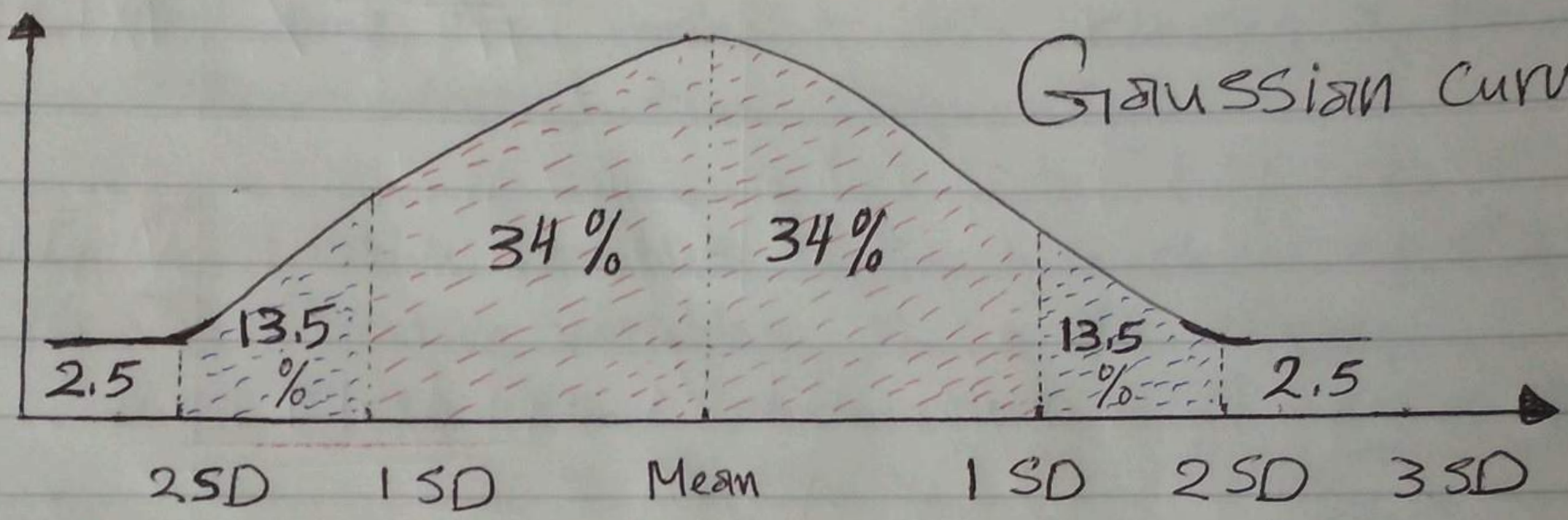
• Mesures of Dispersion :-

RANGE	$R = X_{max} - X_{min}$
VARIANCE	$\sigma = \frac{\sum (X - \bar{X})^2}{n-1}$
SD	$SD = \sqrt{\frac{\sum (X - \bar{X})^2}{n-1}}$
COV	$COV = \frac{SD}{Mean} \times 100$ Compare

- Normal Distribution Curve:-

* Def:- Histogram with particular expected shape describes the frequency distribution of Quantitative data.

* Model:-



* characters:-

- Bell Shaped & Symmetrical.
- Unimodal ⇒ Mode = Mean = Median.
- the percentage:-

68 % fall within mean ± 1SD
95 % fall within mean ± 2SD
99 % fall within mean ± 3SD

- Normally, it reaches infinity, but practically the working range is 6SD.

N.B

1- Mean = Median = Mode in Symmetrical DATA
2- Mean > Median in positive skew.
3- Mean < Median in Negative skew.

* Tabular presentation of DATA :-

- Table :- Systematic presentation of DATA in the form of rows & Columns.

- Idea :- Grouping the variables into classes & Record their distribution frequency.

→ In Qualitative variables :- You have classes e.g: ♂ & ♀
→ In Quantitative variables You make classes :-
e.g :- Systolic blood pressure values :- from 100 to 180

1- decide number of categories :- say (4) C
2- Calculate the Range :- R = 180 - 100 = 80
3- determine the class interval " width " :-

$$W = \frac{R}{C} = \frac{80}{4} = 20$$

4- then :- Classes of systolic BPs :-

- Class I ⇒ 100 : 119
- Class II ⇒ 120 : 139
- Class III ⇒ 140 : 159
- Class IV ⇒ 160 : 179

- Characters of Good table :-
  - Simple.
  - Self explanatory
    - Number & Title
    - Clear rows & Columns
    - Abbreviation Explained
    - Unites of Mesurements
  - Sourced.

- Types of Tables :-
  1. Frequency distribution table.
  2. Cross Contingency table.

[1] Frequency distribution table
= One variable table

* Column for variable
* Column for Frequency
* Percentage may take a third column.

(1) Frequency D of sex.

Variable (sex)	Frequency (n)	
Male ♂	35	70 %
Female ♀	15	30 %
Total	50	100 %

[2] Cross "Contingency table"
= Bi or multi variate table

(2) FD of SBP & sex

* Association could be mesured between two or more variables

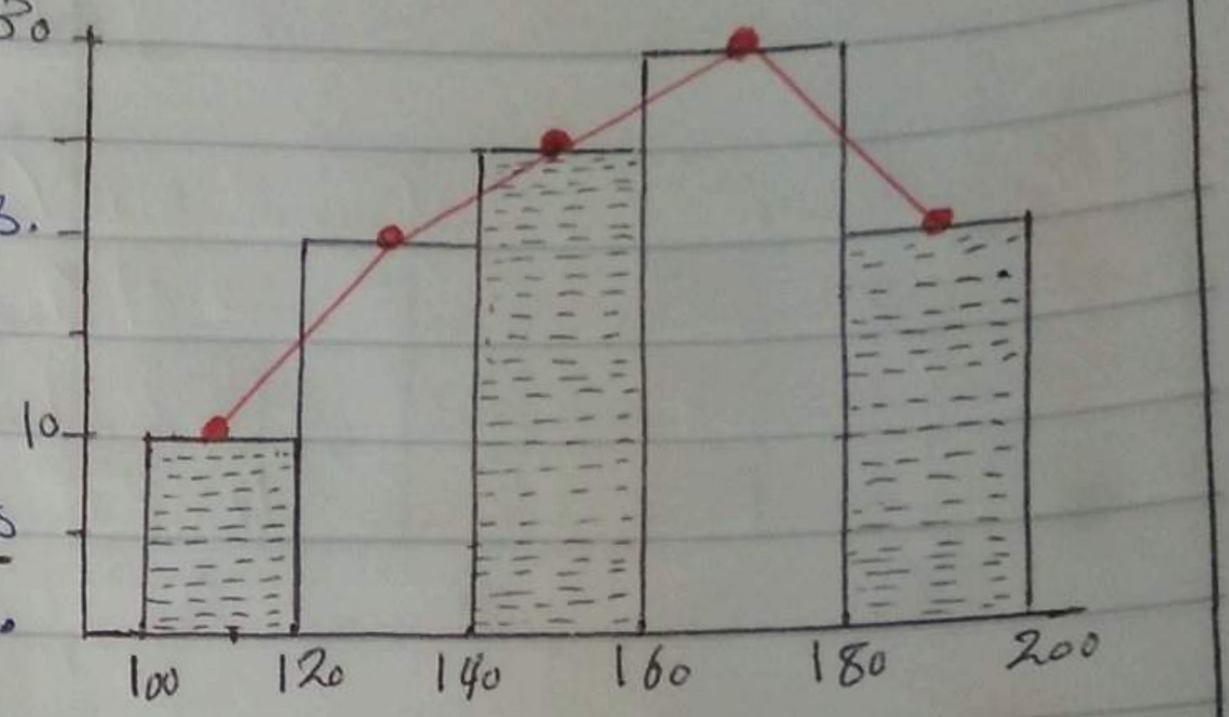
Gradies of SBP	Male ♂		Female ♀	
grade I (100 : 119)	15	43 %	25	50 %
grade II (120 : 139)	5	14 %	15	30 %
grade III (140 : 159)	10	29 %	10	20 %
grade IV (160 : 179)	5	14 %	0	0 %
Total	35	100 %	50	100 %

- FD: Frequency distribution
- SBP:- Systolic blood pressure
- & :- And
- Source:- Dr: Ahmed Khaled Imagination.

⊛ Diagrammatic Presentation of DATA :- "Graphs"

1- Histogram :-

- Columns are joined.
- DATA are Continous.



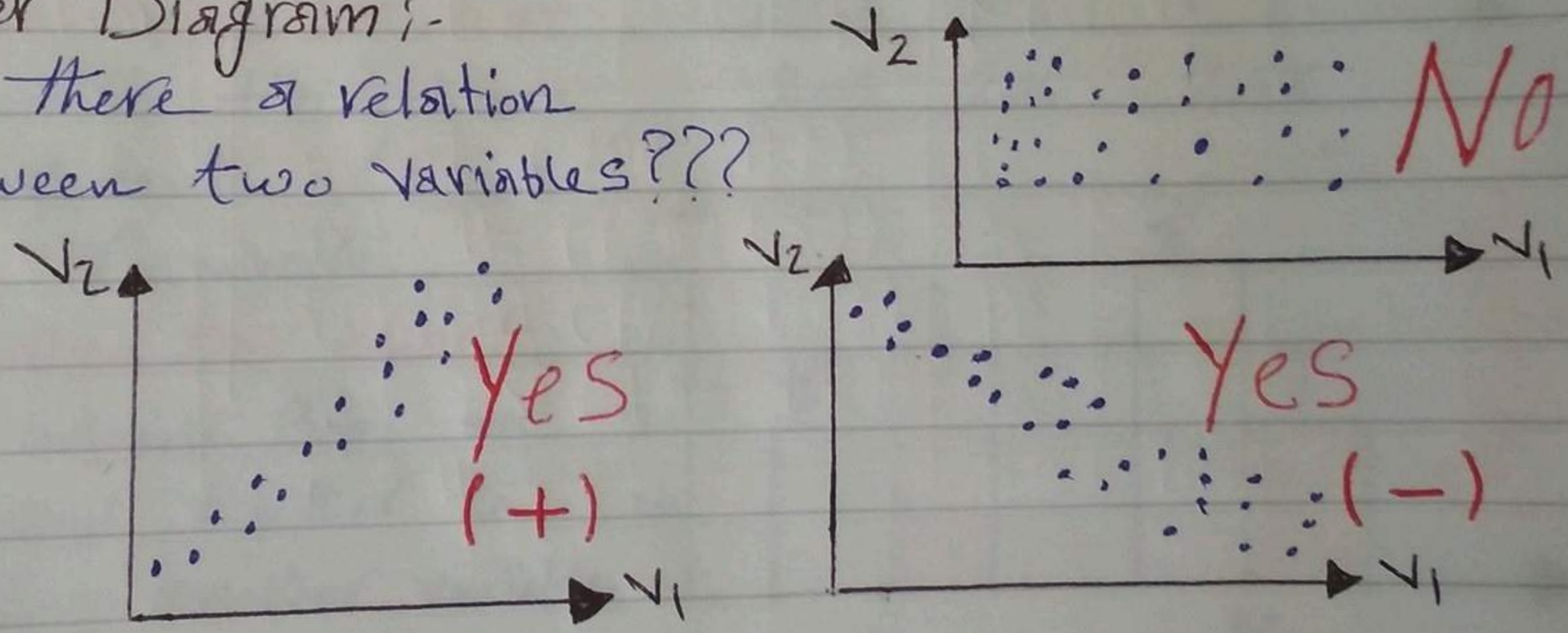
2- Frequency Polygon :-

- Line connects mid points of columns of histogram.

- Used to Compare changes in variable between two groups or in one group over time.

3- Scatter Diagram :-

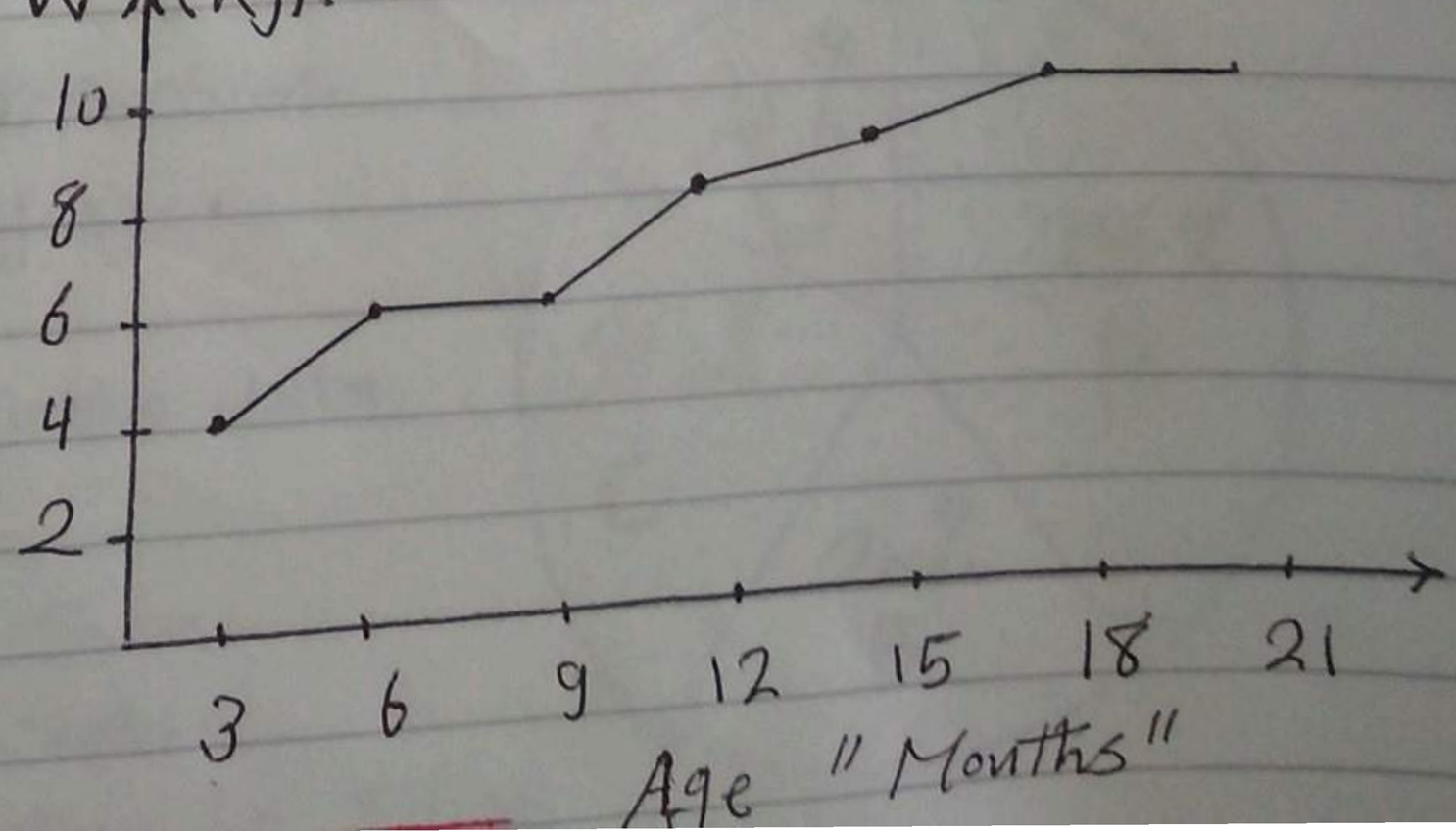
- Is there a relation between two variables???



4- Scale Line Graph :-

- Show the Trend of one varible over another.

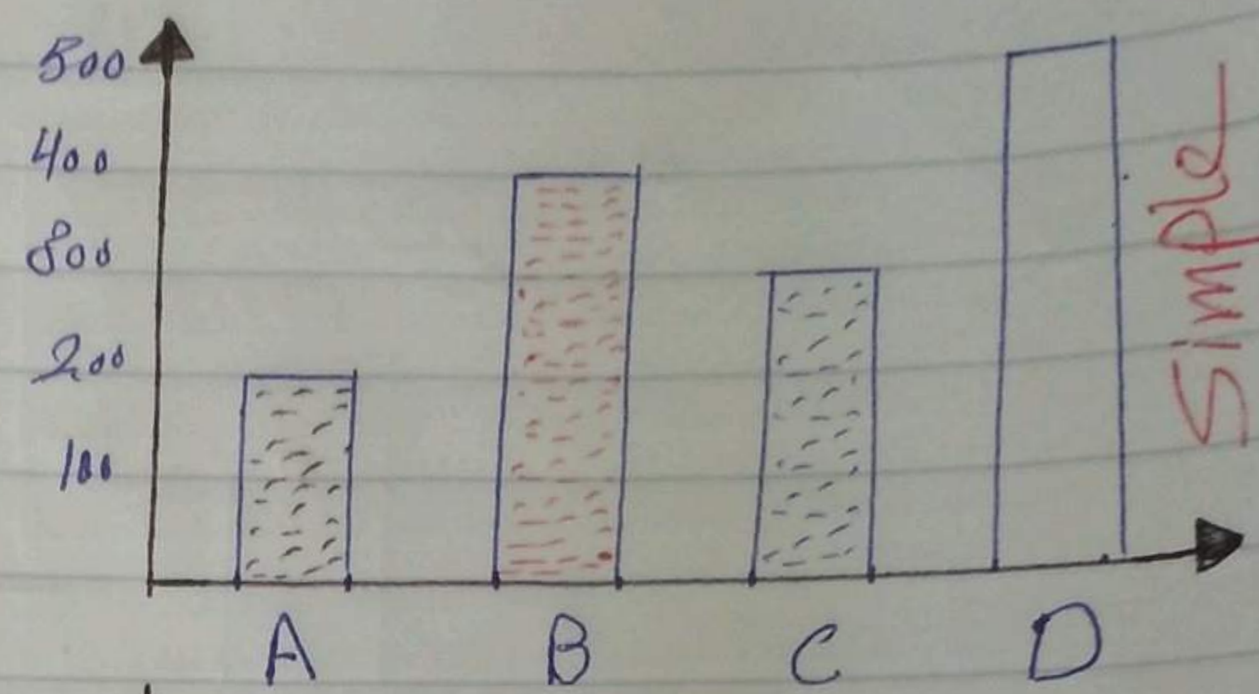
- e.g:.. Growth Curve.
  . Temperature.



⊛ Diagrammatic presentation of DATA:- "Charts":-

① Bar chart

- Columns are Separate
- DATA are Discrete or Qualitative.



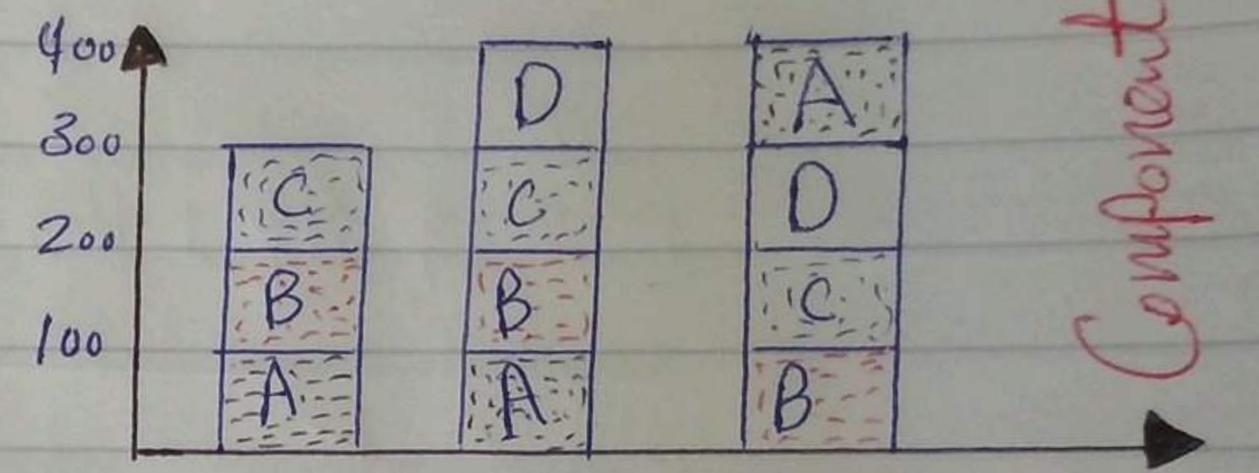
- Types:-

(A) Simple Bar chart

Just Separate bars.

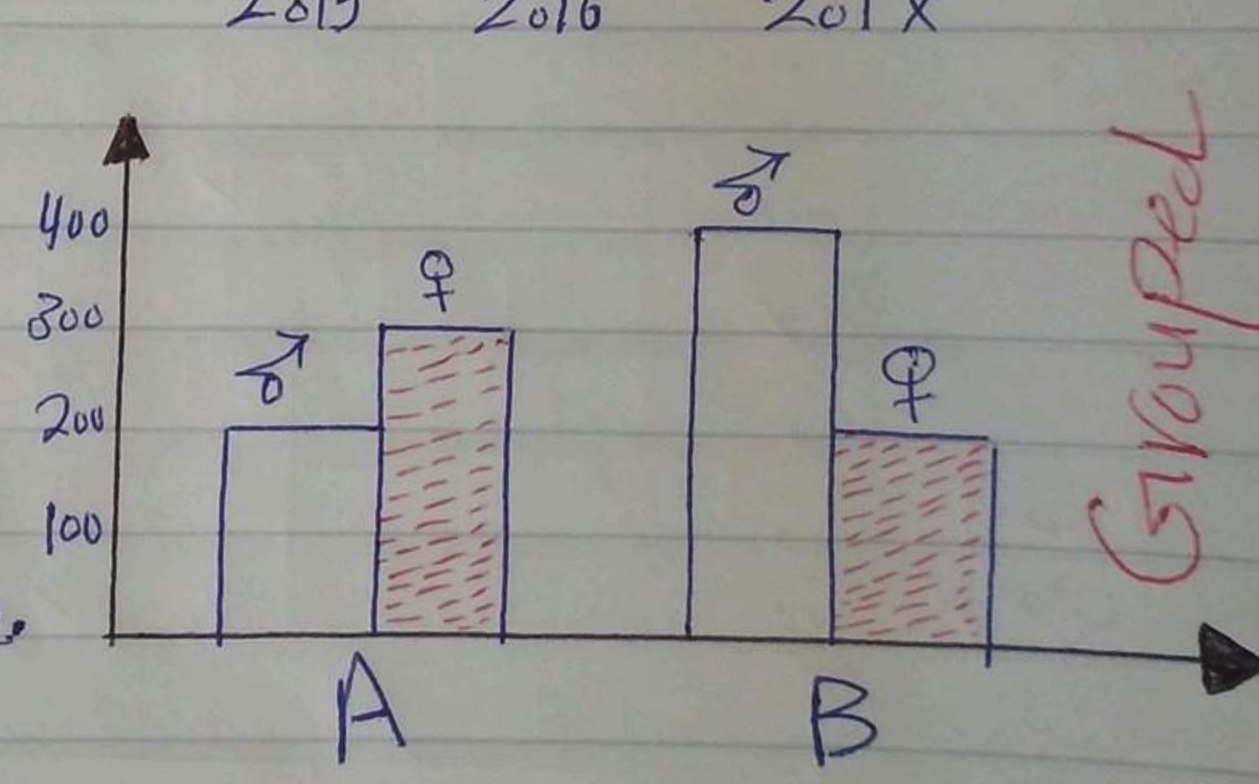
(B) Component Bar chart

- Bar is divided into components to Compare.



(C) Grouped Bar chart

- two or more Bars are grouped together to show another variable.



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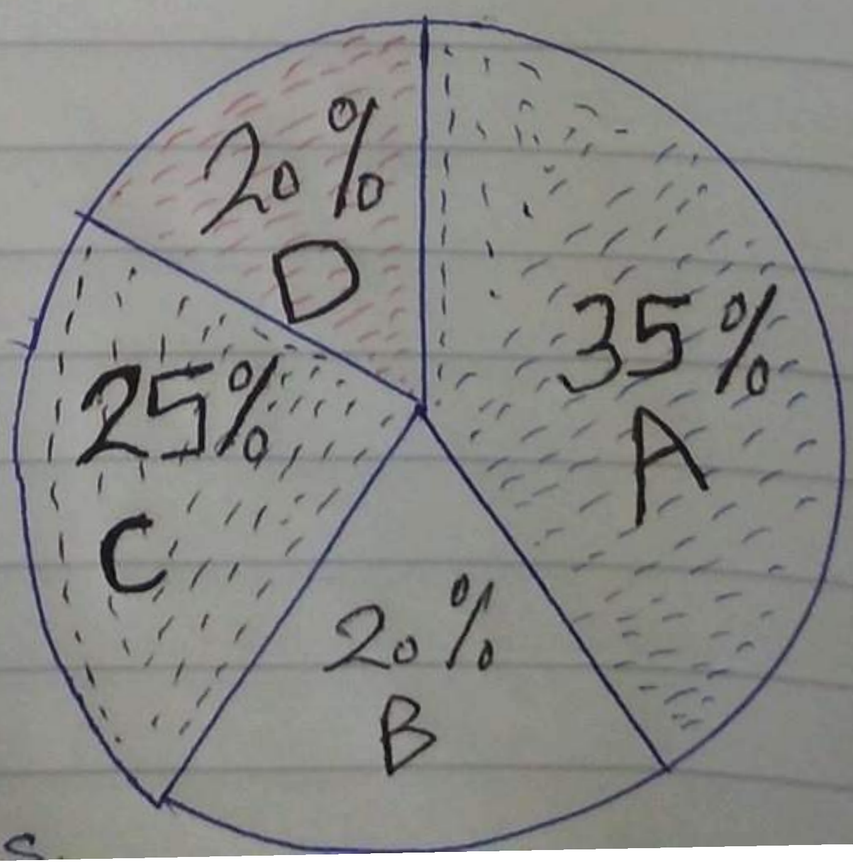
② Pie Chart:-

- Shows the proportion of each category.

- Discrete & Qualitative data with;-
  - → Constant Sum.
  - → Variable value.
  - → Mutually Exclusive slices.



- Quantitative :- Numbers indicating Amounts.

• Discrete	• Continous	• متغير كمي :- أرقام تدل على كميات والرقم إما صحيح وإما كسر
- gaps in values - Counted - finite • EX!- Family size No. Patient	- Integrated values - Mesured, observed - infinite • EX!- weight height	• متغير كيفي :- كلمات تدل على أسماء أو صفات تقتضي الترتيب أو لا.

- Qualitative :- Words Indicating Categories.
  - Nominal :- • No need for order.
    • Sex, Blood groups & Nationalities
  - ordinal :- • Order must be considered.
    • Levels of education & Stages of disease.

N.B - Any Quantitative variable can be transformed into Qualitative ordinal Variable.

- Sources of DATA :-

- Primary Sources	- Secondary Sources
1- Not available DATA 2- Conducting Survey or experiement :- → Cohort study → RCT 3- Tools :- Questionaire, Interviews & observation	1- Available DATA 2- obtained by Reports :- → Census data. → International journals → Hospital records 3- Tools :- Registrations

* Investigator Judgment	Selective Sample	* Non-probability Sample.
. Convenience Easy	. Quota . Segment	. Purposive . character

* Advantages of Sampling :-

1. Studying the whole pop may be impossible.
2. Sample inform about Large populations.
3. Save time, Money & efforts.
4. Use Limited resources.
5. Errors could be estimated.
6. Accuracy could be enhanced.

Pilot Sudy
!!!!! ????

Demography -

* Scientific study of human population
In relation to size, structure & distribution and any change in response to birth, Death or Migration.

CENSUS - A demographic survey Aims to Count every person in the Country.

- De facto :- Present in the area "Actual".
- De jure :- Permanent resident "Habitual".

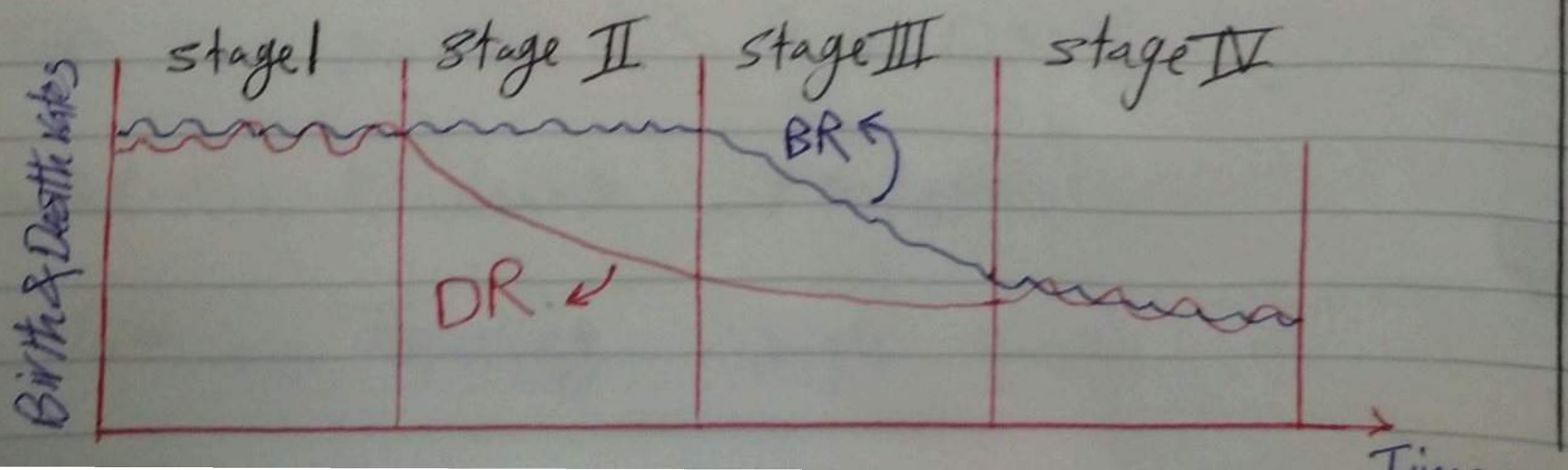
• Census is conducted evey 10 years

* Estimation of inter census population:-

1- Natural increase Method	-Adding $(B - D)N$ "N" numbers of years after the last census "B" Births & "D" Deaths
2- Arithmatic Method	-Adding $\left(\frac{\text{Census} - \text{previous census}}{\text{Years Inbetween}}\right)N$
3- Graphic Method	-Plotting two successive censuses on a graph & joining them by straight L
4- Geometric Method	-Adding $[(B - D)N] + [(\text{in} - \text{out})\text{migrant}]$ - Most Accurate method

* Demographic transition Theory:-

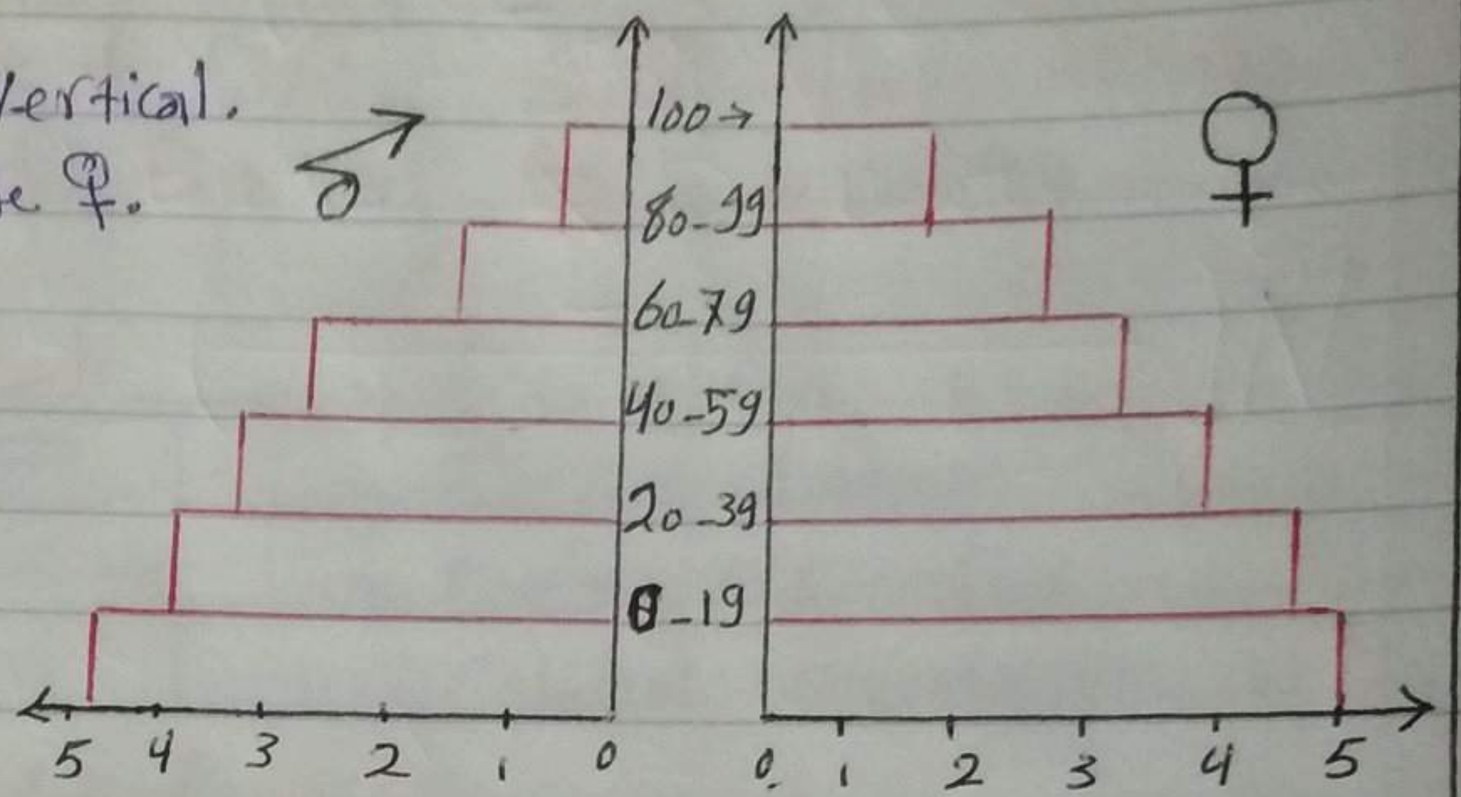
Stage I	high BR	high DR	Pre industrial
Stage II	high BR	Falling DR	Developing Countries
Stage III	Falling BR	Low DR	Developed Countries
Stage IV	Low BR	Low DR	highly developed



Population Pyramid

- **Def:-** Graphical illustration shows the distribution of various age groups in a population.
- **Description:-**

1- Two histograms standing vertical.
2- Left side ♂ & Rt side ♀.
3- Base:- New born
4- Top:- elderly
5- Hight:- Life expectancy.
6- Slope:- Age specific death rate.

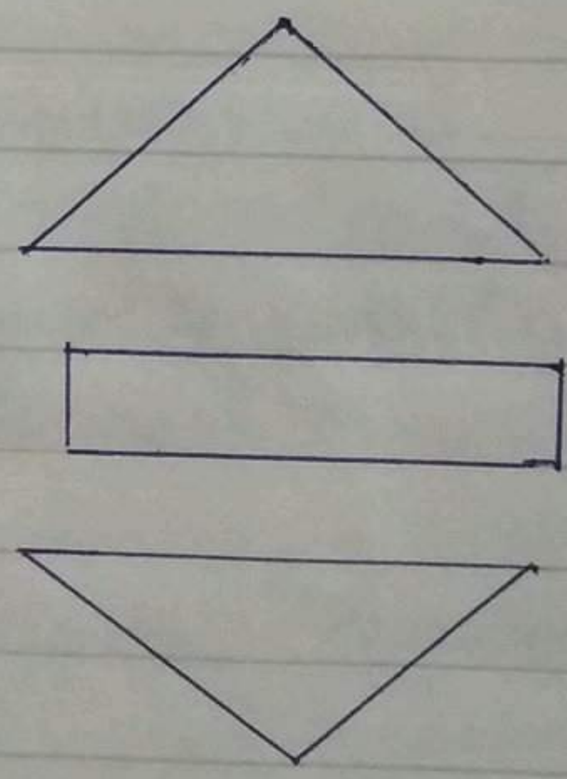


- **Uses:-**

1- Show the composition
2- Show Economic Power (15-65 years).
3- Show Economic dependent (<15 & >65)

- **Types:-**

1- Expanding Pyramid
= Stage II DTT
2- Stationary pyramid
= stage III DTT
3- Constrictive Pyramid
= Stage IV DTT



- **Characters of Pop. pyramid in Egypt:-**

. Base → Wide - high BR
. Top → Narrow - high DR "Few elderly"
. hight → Moderate . Moderate Life EX.
. Slope → Tapering high specific DR

Over Population

- Def :- Population Growth exceeding the Regional capacity.
  * P_{GI} → Natural increase + Net migration
- Causes :- (4)
  1- ↑ BR 2- ↓ DR 3- ↑ Inmigration
  4- Depletion of Resources.
- Hazards :- (4)

1- Environmental :- →
- → Pollution
- → Deforestation
- → Desertification
- → Global warming

2- Economic != Poverty →
- → Inadequate food supply.
- → ↓↓ Productivity.
- → ↑↑ Dependents.
- → Poor Living Conditions.

3- Social :- →
- → Unemployment.
- → ↑ social stress.
- → ↑ Social Violence "Crimes".
- → ↑↑ homeless.

4- Health Hazards :- →
- → ↑ Morbidity → Communicable.
- → Non Communicable.
- → ↑ Mortality :- MMR & IMR.

Management :- (4)
1- Family planning.
2- Improving Maternal & child health care services.
3- Female education.
4- Improving Resources :- →
- → ↑ agricultural productivity
- → ↑ Industrial output.
- → Land reclamation

- A/A+B → proportion
- Time → rate (33)

Mesurements of H&D

* Mortality Mesurements (12)

Indicator	Calculation	Notes
• Crude Death R	$= \frac{\text{Total deaths in C}}{\text{Mid year pop in S}} \times 1000$	- Not appropriate for Comparison
• Age specific DR	$= \frac{\text{Deaths from specific Age group in C}}{\text{Mid year pop of same Age in S}} \times 1000$	
• Still birth Rate	$= \frac{\text{F. Deaths after 28 week gestation in C}}{\text{Total Live \& still births in S}} \times 1000$	
• Perinatal Mortality Rate	$= \frac{\text{Deaths in the Perinatal period in C}}{\text{Total Live \& still births in S}} \times 1000$	• Perinatal period = From 28 week gestation till 7th day after birth. • Reflects Congenital malformation & Birth injury
• Infant Mortality R	$= \frac{\text{Deaths in the 1st year of Life in C}}{\text{Total Live births in S}} \times 1000$	• Most Sensitive indicator ☆ = 20/1000
• Neonatal MR	$= \frac{\text{Deaths in the 1st 28 day of Life in C}}{\text{Total Live births in S}} \times 1000$	
• Post-Neonatal MR	$= \frac{\text{Deaths in the Post neonatal Period in C}}{\text{Total Live birth in S}} \times 1000$	• Period From 28 day of Life till the end of 1st year

* C → Certain Year and Locality.

• Preschool Mortality R	$= \frac{\text{Deaths under age of 5 years in C}}{\text{Total Live births in S}} \times 1000$
• Maternal Mortality RATIO	$= \frac{\text{Deaths of ♀ during P, L \& P in C}}{\text{Total Live births in S}} \times 100\,000$ P, L & P = Pregnancy, Labor & Puerpurium.
• Cause specific DR	$= \frac{\text{Deaths from specific cause in C}}{\text{Mid year pop in S}} \times 1000$
• Case Fatality R	$= \frac{\text{Deaths from specific cause in C}}{\text{Total cases of same disease in S}} \times 100$
• Proportionate MR	$= \frac{\text{Deaths from specific disease in C}}{\text{Total number of deths in S}} \times 100$

* Morbidity Mesurements ☆

• Incidence Rate "IR"	$= \frac{\text{New cases of disease in specific time}}{\text{Total People at risk in same time}} \times 1000$ • Calculated during epidemics ⇒ Attack Rate • Calculate association in prospective cohort.
• Prevalence Rate "PR"	$= \frac{\text{Total cases of disease in specific time}}{\text{Total Population in Same time}} \times 1000$ • Point or Period • Replace IR in rare diseases • Used as indicator in cross sectional study

* Fertility Measurements (7)

• Crude Birth R	$= \frac{\text{Number of Live births in C}}{\text{Midyear Population in S}} \times 1000$
• General Fertility R	$= \frac{\text{Number of Live births in C}}{\text{n of ♀ in child bearing period in S}} \times 1000$
• Fecundity rate	$= \frac{\text{Number of Live births in C}}{\text{n of married ♀ in ch B P in S}} \times 1000$
• Age Specific Fertility R	$= \frac{\text{n of Live births born to women of a 5 years age group in C} \times 1000}{\text{n of ♀ of same age group in S}}$
• Total Fertility R	$= (\leq \text{ASFR}) \times 5$ • represent a 5 year cohort of women
• Gross Reproductive rate	$= \text{Total fertility rate} \times 0.49$ $(\leq \text{ASFR}) \times 5 \times 0.49$
• Net Reproduction rate	① Multiply each ASFR by the Corresponding Age specific Survival rate ② Take the sum $\leq$ ③ then $NRR = \leq \times 5 \times 0.49$

Scheme of Communicable Diseases

① Agent :-

- Name ± types
- Pathogenicity :- all are pathogenic inside the body
- Resistance out side the body
  - Mild : Measles, Meningitis & Rubella.
  - Moderate : Most of them
  - High : TB

---

[2] Reservoir of infection :-

- Human → Case → All
  → Carrier

* Droplet infections :- No carrier except :-
  - MMR → incubatory carrier.
  - M [redacted] S → All types of carrier.

* Enteric infections :- All have carrier.

* Contact infections :- No carrier except :-
  - AIDS → Incubatory carrier

- Animal only → BBR.
- Animal & human → AGYPT.

---

[3] Exit & Inlet :- From the mode.

---

[4] Mode of Transmition ← Droplet
Enteric
Contact

[4] Mode of Transmition :-

* Droplet infection — Respiratory orifices

- Direct
- Indirect :- Fresh in
- Air borne :- Not in [Measles, Rubella & Meningitis]

+

- Contact ⟶ Chicken pox. "Varicella".
- Transplacental ⟶ German Measles "Rubella".
- ↑ Milk ⟶ Diptitheria, Strept & TB..

* Enteric infection — GIT orifices

- Direct :- feco oral
- Indirect :- Contaminated foods & Drinks
- Flies borne :- Mechanically.

+

- Droplet :- Poliomyelitis.

* Contact infections

- Simple Contact :- direct, Indirect.
- Sexual Contact :- STDs.
- Piercing contact :- Arthropod, Animal, Needle.

---

[5] Susceptible Host :-

- Age :- Children ★.
- Sex :- ♂ more than ♀ ★.
- Race :- TB is more common in Negros.
- SE :- Low Socioeconomic Level.
- Immunity :- See later.

- Immunity :- Specific Acquired Immunity :-
  - Maternal :- First 6 Months except TB & Pertuss
  - After infection. Variable
  - After vaccination. Variable

---

6 Environment :-

- Incidence of Communcable diseases increases in areas wz bad housing, bad ventilation & over crowding.

- Season → Winter ⇒ ↑ droplet.
  → Summer ⇒ ↑ Enteric.

---

7 Incubation period

- Most important IP include :-

Hours	- Food Poisoning (6 - 24 - 36) SSB
1 - 3 days	- Strept, Influenza
5 days	- Cholera & Diphtheria ☆
6 days	- plague & Yellow Fever ☆
10 days	- Measles & pertussis ☆
12 days	- Malaria
13 days	- Polio myelitis ☆
1 - 3 weeks	- Others
1 - 1.5 Month	- TB & Rabies
3 Months	- hepatitis C & B
9 - 90 day	- syphilis
Years	- Leprosy & Filariasis

8 Clinical picture → Symptoms.
→ Signs.
→ Complication.

⑨ Diagnosis
- Clinically " symptoms, signs, complication"
- Laboratory :-
  - Culture .
  - Serology .
  - X ray .

---

⑩ Prevention ⇒ Ivy Prevention
- General :- Focus on the Mode.
- Specific :- V S C

Ⓐ Vaccine , Sero & chemoprophylaxis ⟹ DPT.
Ⓑ Vaccine & Seroprophylaxis ⟶ Viral infection .
Ⓒ Vaccine & chemoprophylaxis ⟶ Bacterial I .

Ⓓ Vaccine only ⟶ Yellow fever.
Ⓔ Seroprophylaxis only ⟶ Botulism .
Ⓕ Chemoprophylaxis only ⟶ Strept & Malaria.

---

⑪ Control ;
- Mesures for Cases
- Notification :- Levels See before
- Isolation :- Levels See before
- Treatment
- Disinfection :- Concurrent & terminal
- Release :- after clinical & Lab recovery.
  - 3 successive Negative cultures CDE.
- Mesures for Contacts
  - Listing - Surviellance for Max Ip - Isolation APCY
  - Specific protection :- Sero and/or chemoprophylaxis.
- Mesures for Community :- Ivy preventive Mesures.
- During Epidemics :- protect Borders.

* How to answer a Question of Vaccine ???

1- Name		
2- Nature	Live attenuated	Killed, Toxoid, Special
3- Dose & Route	0.5 ml SC except:- BCG 0.1 ml ID OPV 3dp orally	0.5 ml SC or IM except Rabies ⟶ 1 ml SAIK polio ⟶ 1 ml Booster typhoid ⟶ 1 ml
4- Immunity	Life long in Grenoral	Continous Boosting is Required
5- Indications	* Compulsory :- during 1st two years of Life. - OPV, BCG, DPT, hepB, MMR * People under risk :- - Travelleres to endemic areas ⟶ Y. Fever - Medical personell ⟶ hep. B - Pregnancy ⟶ Only tetanus - Piligrims ⟶ Cholera, typhoid - Food handlers ⟶ " " - During epidemics ⟶ - Post exposure Vaccination ⟶ Rabies	
6- Contra-Indications	• Absolute :- Anaphylaxis, AIDS "Live" • Relative :- - Pregnancy except tetanus - high fever - Immuno suppresion - Blood Trans	

* Droplet Infection

- Viral
  1- Mumps
  2- Measles
  3- Rubella
  4- Chickenpox
  5- Influenza
- Bacterial
  1- Meningitis
  2- Diphtheria
  3- Streptococcus
  4- Pertussis
  5- Tuberculosis

* Mumps النكاف

- Scheme +

1- Immunity acquired after infection is Life Long.

2- Clinical picture :-

Ⓐ Asymptomatic ⟶ 40 %

Ⓑ Symptomatic ⟶ Epidemic Parotitis

- Flue like symptoms :- FAHM.
- Parotitis :- Bilateral 75 %

Ⓒ Complications :-

- Pan orchitis = Epididemo orchitis
- Pan creatitis
- Peri Carditis
- Poly Arthritis ♀
- Benign Menigo encephalitis.

3- Specific Prevention

- Vaccine :- MMR
- Seroprophylaxis :- Specific Immuno Gs.

* Measles	* German Measles
Clinical Presentation	
- Pre Eruptive Stage :- - Takes 4 days - Flue like symptoms * High fever 40C° * Conjunctivitis * Respiratory catarrh - KOPLICK'S spots * Fine red spots on Buccal Mucosa * Surrounded by pallor WZ white centers * appears after 2 days	- Pre Eruptive Stage :- - Takes 1 day - Flue like symptoms * Moderate fever * Keratitis * Respiratory catarrh Never forget Transplacental Infection
- Eruptive stage :- - RASH - Monomorphic - Maculopapular - Masking "Face + Trunk" - Branny desquamation	- Eruptive stage - RASH = Measles rash + - Cervical lymphadeno-pathy
- Complications :- 1- Encephalitis ☆. 2- Kerato conjunctivitis. 3- Otitis Media. 4- Pneumonia ☆. 5- Gastroenteritis. 6- Thrombocytopenia.	- Congenital rubella :- • Lethal :- Abortion, still birth. • Sub lethal :- Multiorgan damage - Brain - eye - Heart - Liver & spleen - Blood - Bone espicially in 1st trimester.

* Specific prevention of Mumps, Measles & Rubella

① Vaccination

- Name ⟶ MMR triple vaccine
- Nature ⟶ Live attenuated
- D & R ⟶ 0.5 ml S.C
- Immunity ⟶ Long Immunity 95%

- Indications ⟶ Compulsory :-
  at 12 , 18 Month of life.
- Contraindications
  - ⟶ Absolute ⟶ AIDS & Anaphylaxis
  - ⟶ Relative
    - ⟶ Pregnancy , High fever
    - ⟶ Steriods , Blood trans

NB
- ⟶ Catch up vaccination of female before Menarch is Mandatory to avoid CRS.
- ⟶ Enders vaccine = Schwarz vaccine = Measles portion of MMR

② Seroprophylaxis

- Specific Immunoglobulins.
- given to contacts
- given to cases to reduce complications.
- Don't prevent Congenital rubella.

*Chickenpox

- Clinical Picture
  - Pre Eruptive :- 1 day
    - FAHM, Low grade
  - Eruptive
    - RASH
      - infective, Pleomorphic, Centripetal
        - → ???
  - Complications
    - Pustulation
    - Pneumonia

- Specific prevention
  - Vaccine & Sero
    - → Varicella Vaccine
    - → LIVE ATTENUATED
    - → 0.5 ml SC
    - → Long term Immunity
  - Indications :-
    - Risky children.
    - should be Compulsory.
  - Contra Indications :- scheme

*Shingles
- → Reactivation of Dormant Virus "Varicella"
- → Infection of Adult.
- → Painful vesicular eruption on skin supplied by the affected ganglion.

*Influenza

① Agent: Influenza viruses A, B, C.

type A → show Antigenic shift & drift "epidemics"
type A → attacks Human & Animals "Birds & pigs"

- types are determined by RNA.
- Sub types are determined by H & N Antigens
- each Subtype "H_1N_1" has many strains.

- Moderate resistance outside the body :- destroyed by AHDIC.

* Influenza

* Clinical picture
  * Asymptomatic.
  * Symptomatic :-
    - FAHM & Rigor
    - Coryza
    - Sore Throat
    - Cough
  * Complications :-
    - Pneumonia
    - others - Encephalitis
      - Reye syndrome
      - pericarditis

* Specific prevention
  - Vaccination
N :- Trivalent IV = Flu shot
N :- Killed Vaccine
D&R :- 0.5 ml IM
Imm :- Short term → 1 year
Ind :- People under risk-
Cont :- Scheme.

- Flu Mist
  = Trivalent IV
  = Live attenuated
  = Nasal spray

* Avian Influenza

- Agent: Influenza virus type A H5N1
- RH - Birds " Hens, Ducks, Geese, Turkeys"
- Exit - Faeces, Respiratory & ocular discharge.
- M.T. - Indirect droplet, Airborne, Eggs.
  ↳ Very very rare human to human
- Host: scheme
- Envi: scheme
- I.P: scheme
- C/P - Influenza + gastroenteritis in child
  - Fatal Complication Pneumonia, Dehydration
- Diagnos: ELISA + PCR & IFAT
- preven - General + Farm + house
  V W X ← ↵ L → H & P
- Control: Scheme + Oseltamivir + IO.

* Swine Influenza

- H_1N_1
- Pigs
- Human to human
- Full recovery

* SARS

- Corona Virus
- Bats & human
= influenza
+ Res. distress
+ pneumonia

Thanks

Meningitis

Infective
- → Bacterial :- N H S & TB
- → Non Bacterial :- Viral, Fungal

Non infective
- → Iatrogenic
- → Malignant

Meningococcal Meningitis

- Niesseria Meningitidis G -ve diplococci + ABCDXY
- Mild Resistance out side the body.
- Carrier is the main source of infection → 5% / 50%

- Clinical presentation :- after IP 2-10 days

I- Nasopharyngeal stage → FAH

*Prognosis → Carrier

II- stage of Meningococcemia → FAHM + Rigor + P. hge.

*Prognosis → House Friedrichsen syndrome (Fulminant)
- hemorrhagic rash.
- Supra renal hge.
- Collapse ⟹ Death.

III- stage of Meningitis

non-specific → FAHM + Confusion.
↑ Avoid irritation → Neck stiffness + photophopia + Arched back.
↑ I.C.T → Persistent headache, Papilloedema, Projectile V.
2 signs → Positive Kerning & Brudzenski signs.

Complication 6 (8th)
- Hydrocephalus
- Cranial nerve palsy
- Optic neuritis
- Myocarditis.
- Arthritis.
- Nephritis.

- Diagnosis → Clinically Mainly.
  ↳ Laboratory
  - Naso pharyngeal swab → For case & carrier
  - Blood Culture "not film" → Stage II
  - Lumbar Puncture → Stage III
    CSF → ↑ Ptn + ↑ pressure + ↑ pus + Bacteria

- Specific prevention Vaccine + chemo*

Name: Poly saccharide Vaccine A & C
Nature: capsular ps w̄ may be added to a protein → strong response
"Conjugate Vaccine"
Dose & R: 0.5 ml SC
Immunity: Lasts for 3 years
Indications: people under risk -----.
ContraIndications :- Anaphylaxis, high fever

- Sulphadiazine
- Rifampicine

* ↓↓↓ carrier.

* ↓↓↓ Mortality
5% or below.

- Control :- (I)
  * For cases
    - → Notification :- to local health authority.
    - → Isolation :- at hospital
    - → Treatment :- Antibiotics per Lumbar puncture
    - → Disinfection :- concurrent & terminal
    - → Release :- after clinical recovery

* For Contacts
  - → Listing.
  - → Surviellance for 10 days.
  - → Specific protection :- chemo.

* For Community → Primary preventive mesures

* during Epidemics → protect your borders human.

Diphtheria

- Corynebacterium diphtheriae G+ve Bacilli
- three biotypes :- Gravis - Intermedius - Mites
- Pathogenic → lysogenized
- Moderate Resistance → Low iron levels.

- Clinical presentation :-

* General toxemia → Low grade fever + A.T.M.
* Local pseudomembrane :-
  - → grayish white, dirty, adherent & bleeds wz removal.
  - → Accompanied by lymphadenitis. (Bull neck)
  - → Site = clinical types :-
    - Faucial ⇒ commonest
    - Laryngeal
    - Conjunctival
    - Nasal
    - Genital & Cutaneous.

* Complications
  - Myocarditis
  - Muscle paralysis CoZ polyneuropathy
    - eye → Diplopia & squint
    - soft palate → Nasal Voice & Food regurge.
    - pharynx → Dysphagia
    - Diaphragm → Acute Respiratory Failure
  - Mechanical obstruction of Respiration by the membrane

- Diagnosis :- → clinically
  - → Laboratory ⇒ swab & Culture → Loffler's or tellurite
  - → Schick test :- Intradermal susce test
    - Positive :- Susceptible person.
    - Negative :- Immunized person.

• Specific prevention: Vaccine + Sero + chemo

Name → D.P.T Vaccine .
Nature → Toxoid (D&T) & Killed (P).
D&R → 0.5 ml SC or IM .
Immunity → Boosting is required at 18, 24 month & school age.
Indication → Compulsory 2, 4, 6 M.
Contr Ind → scheme .

* Formal toxoid → 1 ml monthly 3 doses.
* Aluminium precipitated toxoid → 0.5 ml monthly 2 doses.

• Anti toxic serum in E.R.
• chemo:-
- pencillin
- Erythromycin

• Control of Contacts:- Listing + Schick test + protection

Streptococcal diseases

* Gram positive cocci arranged in chains:-

Types:
- α hemolytic → S. pneumonia & S. viridans.
- β hemolytic → GAS & GBS
- non hemolytic

* Pathogenic espicially GAS 90%
* Moderate resistance outside the body.

Strept infections

Non invasive	Invasive	Complications
(A) Strept pharyngitis	(A) Scarlet fever	(A) Rheumatic fever
(B) Impetigo	(B) Cellulitis	(B) PSGN
(C) Erysipelas	(C) Necrotising fasciitis	

* Strept pharyngitis

- Clinical presentation :-
  - → Fever , AHM
  - → Sore throat → Exudative pharyngitis or tonsillitis.
  - → Enlarged cervical Lymph Nodes.
  - → ± Skin Rash → Scarlet Fever :-
    - GAS → Erythrogenic toxin.
    - Appears after 2 days from fever
    - Generalized & Fades on pressure ☆
    - + Circum oral pallor & strawberry tongue.

* Complications :-
  - Quinzy , otitis Media , sinusitis or Pneum.
  - Rheumatic fever , PSGN .
  - Death in 2% children.

- Specific prevention :- Chemoprophylaxis ⇒ LAP

Rheumatic fever

- Auto Immune disorder follows GAS infection
- More in female ♀.
- clinical presentation :-

* Major Jones criteria :- (5)
  - Pancarditis
  - Fleeting Arthritis
  - Chorea
  - Subcutaneus nodule
  - Erythema Marginatum.

* Minor criteria :-
  - Fever - ↑ ESR, CRP & ASOT

- Specific prevention

* Primary :-
  - prevent strept infection.
  - chemoprophylaxis :- LAP

* Secondary :-
  - early diagnosis.
  - ttt :- A P C

* tertiary :-
  - Educational
  - occupational Rehab

* Restrict pregnancy.

* Pertussis = Whooping Cough

• Clinical Presentation:-

* catarrhal stage "1 week" (3)
  - Rhinitis, Coughing & sneezing.
* Paroxysmal stage "2-6 weeks" (3)
  - Spasmodic Attacks of cough.
  - Inspiratory whoop.
  - ± Vomiting
* Complications (3)
  * Pressure effect:-
    - Cerebral hge
    - Emphysema
    - Rectal prolapse
    - Cerebral anoxia & Convulsions
    - Umbilical hernia
  * 2ry Bacterial infection:-
    - Pneumonia
    - Gastro enteritis.
  * Malnutrition.

• Specific prevent:-

- Vaccine:-
  DPT *
- Sero:-
  Immunoglobuline
- chemo:-
  Erythromycin.

(N.B) No carrier No Maternal Immunity.

No Vaccine → history of epilepsy, Convulsions
→ After 4 years
→ + Scheme

إن الله لا يضيع
أجر من أحسن
عملاً

Tuberculosis

Agent	N :- Mycobacterium TB Acid fast, Alchol F & Aerobic. T :- Human type 98% → Pulmonary TB. M. bovis → Extra pulmonary TB. M. Avian → Immunocompromised. P :- Pathogenic & Virulent → Hypersensitivity. R :- Highly resistant Killed by → Direct sun & uv rays. → phenol. → pastuerization of Milk.
RH	- Human Open Case - Cattle - No carrier.
Exit	- Respiratory discharge - Milk
M.T	- Droplet ③ - Ingestion of Milk
enlet	- Respiratory orifice - GIT
Host	- Age :- below 5 years & above 15 years. - Sex :- ♂ > ♀. - Race :- Negros, Jewish - SE :- Low SE + Special occupation → Medical personell. - Immunity :- - No Maternal Acquired Immunity. - No Proction from previous attacks. - BCG Vaccine is the gold standard. - Diseases :- Scilicosis & Diabetes.
Envir	- Bad Housing, Bad ventilation & Over Crowding. " Poor "
I.P	- 1 - 1.5 month = 4 - 6 weeks

* Clinical presentation:-

Primary TB	Childhood	- Primary complex Ghons focus + TB ⇄ L	- Latent 90% - progressive 10%
Post primary	Adulthood	- Fibro caseos destruction of lung	- Cavitary TB - Miliary TB
Extra p	Affect Meningies, LN, Vertebrae & Kidney.		

Symptoms → General → Loss of weight.
→ Loss of Appetite.
→ Night fever.
→ Night sweating.

→ Local
- productive cough
- Haemoptysis
- Dysnea
- Chest Pain

* Diagnosis: TB is a clinical possibility, Radiological probability & Bacteriological certainity.

1. Clinical
2. Chest X ray
3. Bacteriological examination → Direct smear → Zeil nelson stain
   → Culture → Lownestine jensen M
4. Tuberclin test (5)

- Def:- Skin test based on delayed hypersensitivity R.
- Preparation:- Purified protein derivative. PPD.
- Methods:- 0.1 ml ID PPD in Flexor surface of forearm then wait 3-4 days ⟹ Mantoux test

- Results

+ve	≥ 10 mm Induration
-ve	< 10 mm Induration

False -ve → Test - 1, Patient - 2, Disease - 2

- Uses
  - TB survey studies
  - Case Finding
  - before & after BCG

*Prevention :-
* General prevention :- (7)
* Specific prevention :- Vaccine & chemoprophylaxis

- Name → BCG "Bacillus Calmette & Gurin"
- Nature → Live Attenuated
- D & R → 0.1 ml ID → Leaves S car
- Immunity → Lasts up to 15 years "GS"
- Indications → Compulsory at 1st 3 month
  → People under risk.
- Contraindications :-
  → Tuberclin +ve persons & scheme

- Rifampicin
- Streptomycin
- Ethambutol
- Pyrazinamide
- Isoniazide

RESPIration

*Control :-
- Mesures for case
① Case Finding :-
Sputum ex- CXR- Tuberclin test
② Notification.
③ Isolation :- At Hospital
④ Treatment :- DOTS
- Short Course chemotherapy "TB drugs".
- Supervision & Motivation.
- Monitoring & Evaluation.
⑤ Disinfection :- Concurrent & T
⑥ Release :- after clinical Recovery
⑦ Follow up :- for at least 5 years

- Mesures for Contacts to Open Cases :-
① Listing
② Case Finding
Sputum - CXR - Tuberclin
③ Specific protection
- chemoprophylaxis :- INH
- Vaccination :- Only for Tuberclin -ve persons

*TB Survey → Cross Sectional Study for TB
steps → Administrative aspects 3M
→ Mapping & Consus
→ Random Sample
→ Case Finding 3 Methods MMR

Results :-
→ Prevalence & Trend.
→ Evaluate prevention & C.

Enteric Infections

Typhoid fever = Enteric

* Salmonella typhi , Para typhi A , B & C.
* Moderate resistance Killed by heat , resist Freezing.
* Carrier → All types → Intestinal & Urinary.
  → Intermittent & chronic.

* clinical presentation :- 3 stages

Invasion "1 W"	Progression "2 W"	Regression
- Fever Stepladder - Relative Brady C - Coated tounglee	- ↑ FAHM + Ab. pain + Constipation - Splenomegally - RASH 7th day 10 % only	↓ FAHM - General improvement

* Complications :- 3 groups

A * Cholecystitis - Pyelonephritis - Pneumonia - Myocarditis.
B * Ulcer → Ttge - perforation - Peritonitis.
C * Carrier - Relapse in 10 %.
  → Intestinal "GB" → favoured by cholecystitis.
  → urinary "UB" → favoured by schistosoma.

* Diagnosis :- 3 Items

A * 1st week → Blood Culture
B * 2nd, 3rd week → Stool , Urine Culture.
C * Widal test → Rising Ab titre or > 1/160 is diagnostic from 2nd week.
  - False Results ?????? 3 & 3.

* Specific prevention → Vaccine & chemo "ofloxacin"
* General prevention is the Cornerstone. ☆☆☆
* Paratyphoid fever → Shorter & Milder.
  Ip < > Course

Cholera 1948

* Agent :- • Vibrio cholera with two important sero types :-
  - O1 → Classical & ELTOR → Milder symptoms, More resistant (in / out), More Carrier
  - O139 → Pandemics
  - • Resistance :- Killed by Heat, chlorine & Acidity.

* Exit :- Stool & Vomitus ★ of cases - Stool of carriers.
* Host :- Egypt :- All ages, All sex are Susceptiple.
  Endemic area :- More common in ♂ children.

* C/P :- - Vomiting - Rice water Diarrhea
  - Dehydration - Metabolic Acidosis - Muscle cramps.
  - Collapse → Death 50 %

* Diagnosis :- • Clinically • Laboratory :- Stool culture → A. peptone, TCBS

* Prevention :- - General prevention is the Cornerstone
  - Specific prevention :- Vaccine & chemo "Tetracyclin"
* Control :- Notification :- WHO • Isolation :- Quarantine.
  Release :- 3 Negative C. Isolation of Contacts.

	* Typhoid Vaccine	* Cholera Vaccine
N	TAB Vaccine	Koll's Vaccine
N	Killed "Inactivated	Killed = Inactivated
D & R	2 doses 0.5 ml IM & 1 Ml one Month apart	2 doses 0.5 ml deep SC & 0.5 ml 1 month apart
Im	Effective in 50 % For only 2 years	Effective in 50 % For only 6 Months
In	People under risk	People under risk
C	Scheme	Scheme

N.B * Vi-PS → Poly saccharide V 0.5 ml S.C Single dose > 2 years
* Ty 21 → Live attenuated V 0.5 ml oral " " > 5 years
→ Recommended by WHO for Typhoid fever

* DuKoral Vaccine Killed Oral cholera (01) Vaccine in UK.

Dysentries

Def :- a clinical syndrome characterised by (3)
→ Frequency → = Motions = Diarrhea
→ Tenesmus → Painful & False Sens of incomplete Evac.
→ Stool → Scanty & Mixed wz Mucus & Blood.

●	Amebic Dysentry	Bacillary dysentry
Agent	E. histolytica Cyst	Shigella group 4
I.P	About One Month	About one week
C/P	* Mild dysentry !!! * No Fever * chronic Course	* Sever dysentry !!! * Fever * Acute Attack
Complicat-ions	* Ameboma * Amebic Liver abcess	* Reiter's syndrome = Conjunctivis + Ureth + Artheritis
Treatment	* Metronidazole + Sympto-	* Ciprofloxacin + Symptomatic
prevention	= General prevention of food borne infections = No specific prevention	
Control	= General Control.	

Food Poisoning

Bacterial	Fungal	Natural	chemical	physical
-Toxin;- Staph&Botu -organism;- Salmonella	* Aflatoxin	* Mushroom * shell fish	* Arsenic * Lead	* Radio active substance

Bacterial FB

	Salmonella F.P	Staph F.P	Botulism
Agent	S typhimurium, entiritides Newport ---- etc	-Enterotoxin of Staph Aurius - thermo stable	-ABE Neurotoxin of C. Botulinum - thermo Labile.
RH	-Human case & carrier -Animal "Mainly"; C P P R	-Human C & C -Animal "udder"	- Animal - Spores in the Soil
MT	- Contaminated food -Infected food	-Contaminated F	- Contaminated food ** Ask me !!!!
IP	-About 24 hours	-About 6 Hours	-About 36 hours
C/P	-Asymptomatic ; Most -Acute GiE; NVDA&F - Salmonellosis;- Few. - rare comp;- Cholecystitis	- Entero Colitis NVDA & Colic	.5.M Paralysis → eye .SK.M paralysis → Respi . Cardiac arrest. 50 % Mortality
DX	- Stool Culture "organism"	- Toxin detection	- Toxin detection → Vomitus, Faeces, Food
Pve	- General prevention is the Cornerstone - No specific prevention except for Botulism		
Cont tt	* Supportive . * Symptomatic. * Antibiotics		. Polyvalent Antitoxin . Cathartics

Acute Infantile Gastroenteritis

⊛ Agent:
- Bacterial → Salmonella - Shigella - Clostridia ..... / E Coli → Nosocomial infections in Neonate.
- Viral → Rota virus.
- Proto Zoal → E. histolytica & Giardia.

⊛ Clinical presentation:-

- NVDA + fever
- Dehydration, Electrolyte Imbalance & PEM.

Mild ○	Moderate	Severe
- 0-5 % BW Loss	- 5 - 10 % BW Loss	- 10 % BW loss
- Dry Mouth	- ↑↑ previous signs	- ↑↑↑ previous signs
- Dry Mucus M	- Depressed "Sunken" eye	- Hypovolemic Shock
- Depressed fontanell	- Tacky cardia	

⊛ prevention:-
- General prevention.
- Breast feeding.
- proper weaning.
- family planing.
- Proper Management of cases.

⊛ Control
✱ Case:-
- Notification
- Isolation
- Treatment → ORS
  - Na^+ Bicarbonate.
  - Na^+ chloride.
  - K^+ chloride.
  - Glucose.
  - No role for ∠ AB / AD
- Disinfection
- Release

(NB) ✱ Acute Infantile gastro enteritis is the ↑ Main Killer of infants "6-24 M" in developing Countries & show peak incidence at weaning and with Artificial feeding.

Elimination ☆☆☆ Polio Myelitis ☆☆☆ Eradication

Agent	- Polio virus → PicoRNA - 3 types → No Cross Immu - Moderate Resistance :- Resist Acid - Bile - Alchol Killed by Heat - chlorine
RH	- Human Case & Carrier "All".
Exit Inlet	- Stool & Respiratory discharge. - GIT & Respiratory orifices.
MT	- Ingestion. - Droplet :- in developed Countries
Host	- Age :- children but :- Adults in developed Count
Envi	Scheme + Summer & winter
IP	13 days
C/P	* Asymptomatic :- 95 % * Non specific symptoms :- - fever - NVDA - flulike * Non Paralytic Polio :- - Meningeal Irritation * Paralytic Polio :- - Spinal :- AHC. - Bulbar - pulbospinal

- Prevention :-
  * General prevention (7)
  * Specific prevention :-

Sabin Vaccine

N : Trivalent Live Attenuated
D&R : 3 drops orally
Imm :- Life Long Immunity.
- portal & humoral.
- personal & herd.

Indic :- Compulsory 0, 2, 4, 6, 9, 12, 18, 24
Cont. I :- Scheme

Salk vaccine

N : Trivalent Killed Vaccine
D&R : 0.5 ml IM
Immu - Boosting is Required 1 year
- Humoral Immunity only
- Personal Immunity only
Indic :- Not used in Egypt.
4, 5, 10 Months of life
Cont :- Scheme

Seroprophylaxis for exposed Contacts.

* No Specific ttt & the aim is to limit disability.

Hepatitis viruses

	Hepatitis A	Hepatitis B	Hepatitis C
Agent	HAV PicoRNA V	HBV HepaDNA V Killed by AHDIC	HCV RNA virus 6 Major Genotypes
RMI	Human Case & Incubatory carrier →		the same
Exit	Stool	Blood & body fluid	Blood Mainly & B. fluid
Mode	- Feco oral - Food Contamination - Fly borne	- Parentral - Sexual - Vertical	- Parentral ✱ - Sexual → Not Common - Vertical → Not Common
Sus. Host	- Age: More in child - Sex: More in ♂ - SE: Low SE level - Immunity: Maternal - After infection - After vaccination	- Patient of Hemodyalisis, Injection or Blood trans - Paramedical & Medical personell. - person → Drug abuser, tatooing HBV:→ - Sexual contact Multiple & Household with case - Fetus to an infected Mother	
Dip	Average 3 weeks	Average 3 Months	
C/P	- Asymptomatic - NVDA & Jaundice - Fulminant: Pregnancy	- Asymptomatic - NVDA & Jaundice - chronic hepatitis	- Asymptomatic 80% - NVDA & Jaundice - chronic hepatitis
Comp	Vare → Resolution	Cirrhosis & HCC	cirrhosis & HCC
Diagnosis	- ↑ Liver enzymes - PCR - Positive Ig M - ↑ Bilirubin	- ↑ Liver enzymes - PCR - Positive HBs Ag - other HBV Markers	- ↑ Liver enzymes - PCR - positive Ig M & IgG - Biopsy

* Prevention

HAV hepatitis

A- General prevention of food borne infections.
B- Specific prevention :-

	HAV Vaccine	Seroprophylaxis
N	Inactivated Vaccine	- Standard IG.
D&R	0.5 ml IM	- pre & post exposure
Imm	- Boosting is Required 6 Month after the Intial dose. 95 %.	- Contacts - pregnants . Travellers
Ind	- Recommended for All children below 1 year - People under risk "1 ml"	- protective for 4 Months
Cont	* Schema	

HBV hepatitis

A- General Mesures that block the Mode of transmition.
B- Specific prevention :-

	HBV Vaccine	Seroprophylaxis
N	synthetically made "DNA Recombination"	- Immunoglobulins
D&R	- 0.5 ml IM	- pre & post exposure
Im	- one of the safest & Most effective	- Emergent
Ind	- Compulsory 2, 4, 6 Months - People under risk 0 1 6	- Frequent Blood trans - exposed contacts.
cont	- Scheme	- Baby of inf Mother.

* HCV hepatitis has no specific prevention.
* ↳ treated by Sovaldi, olysio ± Ribavirin.

* HDV = HBV & HEV = HAV.

Contact Infections

Ⓐ Inoculating :-

- Simple "Asexual" ⟶ Anthrax, Brucellosis
  Tetanus, Gas gangrene & others.

- Sexual ⟶ STDs :- AIDs & Syphilis .....

Ⓑ Penetrating :-

- Animal bite ⟶ Rabies
- Arthropod bite ⟶ Malaria, plague, Yellow fever ....
- Needle ⟶ Hepatitis B, C .... .

	Anthrax 3 Modes	Brucellosis 3 Modes
Agent	- Bacillus Anthracis g+ve spore forming bacilli	- Brucella g-ve Intracellular bacilli . 3 types :- M.A.S !!!!
RH	- Animal :- cattle, sheep & goats - Human case :- Pneumonic A.	. Animal only :- Strict Zoonotic goats, sheep, cattle & pigs
Mode of Transmission	- Direct contact . - Ingestion ; Meat, Milk. - Inhalation :- Spore .	- Direct Contact :- Tissues, discharge. - Ingestion :- Meat, Milk . - Inhalation :- Droplet nuclei.
I.P	one day to one week.	- One week to one Month.
Sus host	All ages, All sex, more	among farmers, butchers & vet. doctors.
Clinical presentation	* Cutaneus Anthrax :- Ulcer + vesicles filled with blood + black eschar. = Malignant pustule.	* Acute Brucellosis - Fever :- Swinging = undulant = Malta = FUO = 30-40 C° - Body Aches & Arthralgia. - Splenomegally & Lymphadenopathy.

Clinical presentation	*Intestinal Anthrax NVDA + Blood < up down *Pneumonic Anthrax Hemorrhagic → Mediastinitis, P. edema, Pl. effusion = Wool Sorter disease	* Chronic Brucellosis :- - No fever - Body Aches + periodic exacerbation. - for months or years ** No GASTRO Enteritis **
Complications	*Cutaneous Anthrax Persistent disfigurement * Septicemic Anthrax with Intestinal or pneum * 100% fatality with Pneumonic Anthrax	- Endocarditis :- fatal - pneumonia - Meningo-encephalitis - Hepatocholycystitis - Osteoarthritis - Orchitis
DX	- Direct smear & Staining - Serology :- ELISA	- Blood, Urine Culture. - Serology :- ELISA. - Brucellin test
Prevention	*Mesures for Animal :- - Vetrinary supervision, Vaccination & Eradication of infected * Mesures for A. product :- - Meat Sanitation - Wool disinfection * Mesures for human :- - Health Education - Protective Mesures ←	* Mesures for Animals :- - Milk & Meat sanitation. - Sanitary disposal of excreta. * Mesures for Human :- - Health Education. - protective Mesures ←
Control	- WHO & Quarantine - Penicillin & Doxycyclin - Isolation of Contact	- Mesures for Case only - Tetracyclin - Contact :- No man to man

	Tetanus	Gas Gangrene
Agent	- Clostridium tetani "tetanospasmin" - G+ve Spore forming Anaerobic bacilli ←	Clostridia → perfringes ★ & others
RH	- Animal & Man Gut	- Animal & Man Gut
MT	- Wound Contamination " Contact"	- Wound Contamination
Susceptible host	- Age :- Neonates & Adults - Sex :- ♂ - SE :- Low + farmers, Soliders, pregnants - Immunity:- Scheme	DIABETICS
IP	- 1 - 3 weeks	- Few days
Clinical picture	* Wound → umbilical stump, Purpural Wound, traumatic Wound. * General :- 1- Trismus 2- Risus sardonicus 3- Dysphagia 4- Aphonia, Asphyxia 5- Hyperreflexia 6- Convulsions	* Wound :- Crepitations Severe pain & Foul Smelling * General 1- Nausea, Pallor 2- Toxic Jaundice. 3- Oliguria.
Prevention	- Prenatal care :- Maternal Immunization ★ Tetanus toxoid ; 2 doses 1 month apart then single dose for next pregnancy - Natal care :- Hygenic birth practices. - Post natal care :- Hygenic cutting of Um. cord - Active Immunization of risky people. - Proper Management of Wounds - Compulsory Vaccination DPT - Post exposure Antitetanic serum	- Proper Management of Wounds - Poly Valent Anti GG Serum - No Vaccine
		** Penicillin is the Standard Anticlostridial Antibiotic.

* Key points in Some minor Contact diseases:-

① Erysipelas: - GAS - IP: 1-3 days - Skin
- Localized Acute suppurative inflammation.

② Ophthalmia Neonaturum: - Nisseria gonorrhea in birth canal
- Purrulent conjunctivitis - ttt :- tetracyclin.

③ Trachoma: - Chlamydia trachomatis - Contact & Flies.
- Follicular Conjunctivitis -

④ Favus : - Fungal infection of scalp transmitted from man, animal.
- ttt :- Local Antimycotic & oral griseofulvin.

⑤ Scabies : - Sarcoptes scabie. ttt :- permethrin & Hygine.
- Nucturnal Itching :- Axilla & Nipples.

⑥ Leprosy : Hansen disease
- Mycobacterium Leprae - Human case - Contact
- Ip :- Years 5-20 Y
- c/p :- - Tuberculoid → ↑↑ - Hypopigmented skin patches.
- Lepromatous → ↑↑ - skin nodules.
- Borderline + diminished sens & Trophic leisions.

- Diagnosis : = Clinically
1- Skin smear " Acid fast bacilli ".
2- Serology ⇒ Syphilis like.
3- Lepromine test.

- Prevention :
- Socio economic development.
- Lepromatous Settlement " Colony ".
- DRC for 6-12 Month

RABIES

*Agent: Rabies virus, RNA virus, two strains → street / fixed
*RH: Animal :- Dogs, Wolves, Foxes, Bats & RATS.
*MT: → Animal bite. → Animal licking.
*Exit: Saliva
*Host: Adult ♂ dealing with Animals.
*IP: Average 6 weeks
*C/P: Depend on site, number of bites & dose of virus:-

Non specific	Furious Rabies	Paralytic Rabies
- FAHM - Itching "Local at site of bite	- Hydrophobia. - Aero phobia. - ↑↓ Temp & B P. - Convulsions.	- Ascending flaccid paralysis - Respiratory failure - Fatal out come

*Diagnosis: - clinically - Animal brain :- Negri bodies

*Prevention: Very very very Important.

- For Animal
  - Eradication of street Animal.
  - Vaccination of owend Animal "Live Attenuated"
  - Quarantine for Imported Animal.
- For Man

Duck Embryo Vacc	Human diploid cell strain V
- Inactivated Vaccine. - 1ml IM, I abdominal. - 21 daily dose & two boosters 10 days apart. - protective for 3 years.	- Inactivated Vaccine - pre exposure :- 1ml IM or 0.1 ml ID at 0, 7 & 28 day. - Post ex : 1ml IM 0, 3, 7, 14, 30, 90.

*Anti Rabies serum :- Local & IM in
- person with multiple, severe bites.

* Control = Bitten person

Ⓐ Local :-
- Anti septics.
- Anti rabies serum.
- Avoid sutures.

Ⓑ General :-
- Anti tetanic serum
- Past exposure
- Vaccination
- Anti rabies serum.
- Isolation till Recovery or death

	AIDS	Syphilis
Agent	HIV Lymphotropic "Helper"	Treponema Pallidum Spirochaetes
RH	Case " Symptomatic or not"	Case
MT	Sexual, Parenteral & Vertical	the same + touching # Leision.
Sus - Host	-Age → Sexually Active Adults. -Sex → More in ♂ !!!. -SE → Low SE, sailor, driver. -Immunity → No Vaccines. -Risky Groups → Abnormal sexual behavio → IV Drug Addicts → Patient :- hemodyalisis. Blood trans, injection. → Infant to cases	
IP	1 - 3 Weeks	9 - 90 days
C/P	* ACute stage :- • Transient Local Ly + RASH. • Flu Like symptoms ARS. * Asymptomatic stage :- • Months to Years * Clinical AIDS stage :- • Persistent Gi lymphadenop. • AIDS Related Complex ARC. - FAHM & chronic diarrhea. - Hepatosplenomegally. - Opportunistic Infections. - Pneumocystis Carinii - Herpes simplex. - Candidiasis. - Opportunistic tumor :- - Kaposi sarcoma. - Non Hodgkin lymphoma.	* 1ry Acquired # :- • Chancre. • Regional lymphadenopatty * 2ry Acquired # :- • RASH. • Generalized Lymphadeno • Condyloma Lata. • Mucosal patchos. * 3ry Acquired # : Gumm • Tabes dorsalis & GPI • Aortitis & Aneurysm. • Charcot joint "foot" * Congenital # :- • Abortion, still birth • Deafness, blindness • depressed nose, P. Palate • Hutchinson teeth. • Sabre tibia.

	AIDS	Syphilis
- Diagnosis	- CBC :- Lymphopenia - Serology :- - ELISA - Western plot test - RIBA	- Dark ground Illumination - Non specific test :- - Wasser Mann reaction. - VDRL. - specific # test - FTAT - TIT
- prevention	- Screening before blood transfusion. - Using Disposable Syringes. - Sterilization of Instruments. - Health education about Hazards of Addiction & abnormal sexual behaviour. - Restrict pregnancy of ♀ cases or induce abortion.	
- Control	Notification : Take full precautions. Isolation :- espicially if Pt bleeding or with diarrhea. ttt , Disinfection , release.	

- NB:

* Gonorrhea : easily diagnosed in male ♂.

* Chancroid :- Haemophilus ducrey , Soft & painful.

* lymphogranuloma venerium : Chlamydia L_1, L_2, L_3.

« ولا تقربوا الزنا إنه كان
فاحشة وساء سبيلا »

ARTHROPOD BORNE INFECTIONS

Malaria

Agent
- Plasmodium Parasite 4 types:
  - Vivax & ovale.
  - Malariae.
  - Falciparum.

RH
- Human case

MT
- Bite of infected ♀ Anopheles.
- Less commonly Blood trans or Transplacental.

Sus Host
- All ages, both sexes & more in farmers + No Vacc.

Environ-
- Rural invironments with rainfall.
- More in Summer.

I.P
- 12 day "extrinsic & intrinsic" but 30 in Quartan.

C/P
- *3 clinical types of Malaria:
  - Benign tertian M: 48 h → P. vivax & ovale
  - Quartan Malaria: 72 h → P. Malariae
  - Malignant Maraia: irregular → P. Falciparum.
- *3 Clinical stages:-
  - Cold Stage: → shivering & Rigor
  - Hot Stage: → HyperPyrexia + AHMV
  - Sweat stage: → Profuse S & reliefs

Complic
1- Haemolytic Anaemia.
2- Hepato splenomegally & Jaundice.
3- Haemoglobinuria = "Black water fever.
4- Pernicious Malaria" Multiple infarcts".

Dx
- Clinically + thick blood film + Serology.

*Prevention:-

Ⓐ Arthropod Mesures:-

1- chemical insecticide & Larvicides
Pyrithrin, DDT, Paris green.
2- Genetic:- ♂ sterilization.
3- Natural enemy: Gambusia fish
4- Mechanical destruction of Breeding surfaces:-
- drainage of stagnant water.
- Clearance of vegetations.

Ⓑ Human mesures:-

1- Health education.
2- Screens.
3- Repellents.
4- Chemoprophylaxis:-
- Travellers to endemic area
- one week before up to four weeks after.

Chloroquine:- Safest.
Primaquine:- Commonest
Fansidar:- Strongest

Malaria survey

- Def:- Epidemiological study aims to study the
- Magnitude, risk factors of Malaria & evaluate
- preventive & Control Mesures.

- steps:-

Ⓐ Administrative Aspects 3M.
Ⓑ Mapping of Area & Hydrography.
Ⓒ Census & sampling.
Ⓓ Malarial indices finding:
① Human indices:-
- Spleen index.
- parasitic index.
- Gametocyte index.
② Insect indices:-
- Oocyst index
- Sporozoite index
- Insect:-
* Species.
* Breeding surface.
* feeding habits.
Ⓔ Recommendation for P&C.

Malaria Eradication

① Preparatory phase:- survey
② Attack phase:- insecticide + Larvicide + chemo therapy & prophylaxis
③ Consolidation phase.
④ Maintainence phase.